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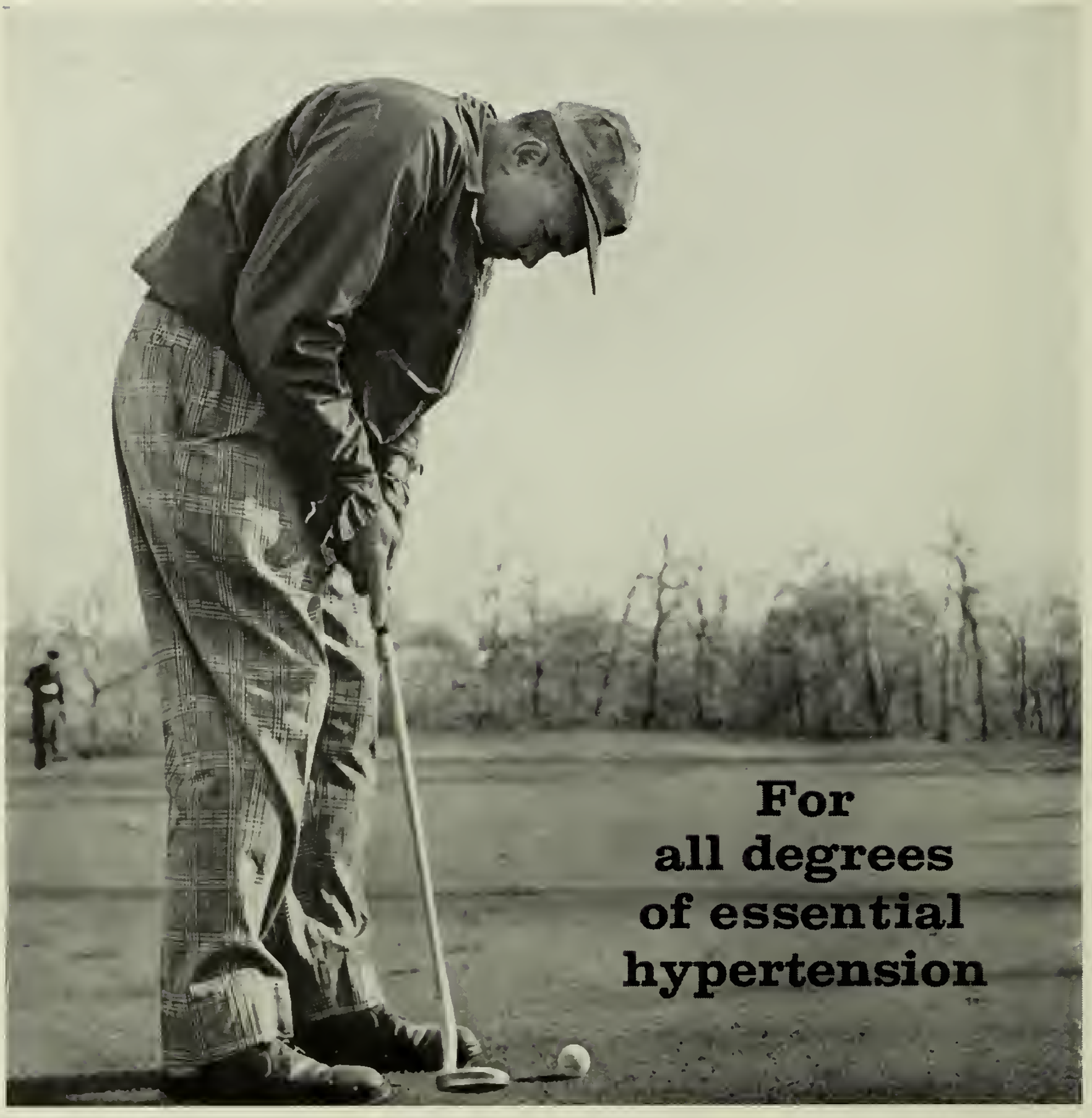

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Articles and features to be found in the next issue of THE JOURNAL-LANCET

The second paper in the series on Urology for the Practitioner will appear in the February issue of THE JOURNAL-LANCET. Dr. George L. Garske, instructor in urology, University of Minnesota, and consultant to the Veterans Administration Hospital, Minneapolis, discusses the female urethra.

A common complaint in women of any age is that of "bladder trouble." Dr. Garske points out that this so-called "bladder trouble," in most instances, has its primary source in the urethra, manifesting itself either as an acute or a chronic type of urethritis or as one of the other entities peculiar to the female urethra.

It is found that the annoying and aggravating symptoms and occasionally extensive disability produced by disease of the female urethra are usually in sharp contrast to the degree of pathology found on examination, particularly in chronic urethritis.

It is stressed that lesions of the urethra should always be considered as a source of abdominal pain or discomfort in women. The urethra is partially or fully responsible for 75 per cent of urinary disturbances.

Among other papers scheduled for the February issue are:

- **Mastoiditis in Children,** by Richard B. Tudor, Minneapolis.
- **Anoplocephalid Tapeworm Infection in a Child,** by Teodor Koivastik, Fargo, North Dakota.
- **Preliminary Studies of an Acute Coronary Care Area,** by Hughes W. Day, Kansas City, Kansas.

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Introduction to Series on Urology for the Practitioner

If the discoveries in medical science could be plotted as a curve, with the last few years serving as the abscissa, the curve would take on the appearance of a wave. In these days of such rapidly increasing knowledge in so many specialties, it is difficult for the general practitioner to maintain his fund of information at the highest standards. While urology has built, accepted, and used many of the fruits of science, yet it is grounded in tried, true, and basic fundamentals. It will be the purpose of this beginning series on urology for the practitioner to strike a balance between the old and the new. We shall endeavor to stress practical aspects of diagnosis and treatment of diseases commonly seen by general practitioners. No attempt will be made to "talk down to the G.P." Neither will the papers in this series be so ultra- or pseudoscientific as to be over the head of one who is practicing. Our authors are all well-qualified urologists who are participating in this series because of their great interest in teaching. We hope that each of you will find enjoyment through our efforts.

GEORGE T. MELLINGER, M.D.
Guest editor
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Impotence in the Male

B. LYMAN STEWART, M.D.

Los Angeles

IMPOTENCE in the male is defined as the inability to obtain and maintain an adequate erection of the penis for the performance of sexual intercourse. It is to be distinguished from infertility, which is dependent upon the spermatozoa. An impotent man can be fertile and a potent man can be sterile. Coitus is the most pleasant and exciting of all sensations the human body can experience. It is ironic that such a fundamental and necessary phenomenon becomes difficult or impossible. This is especially tragic when the individual man is anatomically intact.

Impotence occurs in 10 per cent of the anatomically intact male population of the United States. The incidence increases with advancing age. Rubin[1] has given the following statistics: From age 60 to 65 the incidence is 38 per cent; over 65 it is 52 per cent. Although the sexual drive begins to decline in the early 20s, the ability to have and maintain an erection should not be lost. The increase in impotency that occurs with advancing years is not due entirely to physiologic changes in the male. There are pressures exerted by unconscious and environmental forces that inhibit erection. When the force of the sexual drive declines, the individual's inhibitions are able to exert more and more pressure and impotence can eventually occur. Therefore, the more inhibited the individual, the sooner will impotence become manifest. Because most of the inhibitions are below the level of consciousness, treatment is difficult and, at times, impossible. However, some patients seem to recover their potency with a minimum of therapy.

As civilization has advanced, the incidence of impotence has increased. There seem to be more and more demands made on the individual which, in turn, consume the man's available energy. Potency is dependent on the individual's surplus energy. The greater the demands on a man's physical and mental energy, the less there is left over for romance. Another product of civilization's advance is the greater differentiation between the sexes. This results in an increasing struggle for supremacy between the sexes and has much to do with unsatisfactory sexual relations.

The symptoms of impotence can be manifested as primary failure of erection, loss of erection before ejaculation, premature ejaculation, or the inability to ejaculate. Even though the manifestations vary from individual to individual, the unconscious emotional conflicts are usually similar. Some of these symptoms seem to be more easily helped than others. Ejaculatio praecox, for example, is usually more difficult to treat than total loss of erection.

Male impotence can be divided into 2 major categories, namely, organic and functional. Organic impotence accounts for 10 per cent and functional for 90 per cent of the total cases. Impotence is probably 100 per cent functional in the intact male under 55 years of age. This probably applies to many such men over the age of 55. It is very important for the physician to determine whether the impotence is organic or functional; otherwise too many treatment failures will occur. Every patient who seeks therapy should have a complete history, physical examination, urologic survey, routine laboratory tests, and special laboratory examinations such as blood iodine, six-hour glucose tolerance test, 17-ketosteroids, androgenic and estrogenic ratio, and a quantitative assay of the urinary gonadotrophic hormones. Aortography is necessary in certain individuals, and some must have a complete neurologic survey including a spinal fluid examination. The Barr test can be helpful in de-

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termining hermaphrodites and those with Klinefelter's syndromes. The necessity of these latter tests will usually be revealed from the findings of the physical examination and history.

ORGANIC IMPOTENCE

Some of the commoner causes of organic impotence are as follows: eunuchoid syndrome; pituitary failure; tumors of pituitary and adrenal cortex; radical surgery which destroys the pelvic nerves or disturbs the arterial circulation of the penis, or both; spinal cord disease such as syphilis, multiple sclerosis, combined cord degeneration, and transverse myelitis; Leriche's syndrome;[2] diabetes; pernicious anemia; and drugs. Tranquilizers such as the phenothiazines, Rauwolfia derivatives, and the antipressor ganglionic blocking agents can prevent erection.

Eunuchoid syndrome. The diagnosis of the eunuchoid syndrome is usually not difficult. The testicles have been lost by trauma or disease or are congenitally absent. When there is a congenital absence of the testicles, bilateral cryptorchism must be ruled out. This may require an exploratory laparotomy. In the late teenager or the young adult, secondary sexual characteristics will rule out congenital absence of the testicles. If the patient is intersexual, the problem may be difficult. The diagnosis can almost always be made from the proper laboratory tests and surgery. As a rule, intersex does not occur often enough to present a great problem in the treatment of impotence. In doubtful cases of the eunuchoid syndrome, a trial on testosterone will usually clarify the picture. Intramuscular injections of 50 mg. of testosterone, three times a week for three weeks, will usually produce enough of a response in the eunuch to verify the diagnosis. After a response has been obtained, testosterone must be given continuously to maintain a proper androgenic response. This can be done by oral or buccal tablets and implanted pellets or repository injections of testosterone, or both. The exact amount necessary varies from individual to individual and the clinician will, by trial and error, determine the correct dosage for the patient. When treating young men, the initial doses should be smaller and then gradually increased; too much androgenic stimulation can cause priapism.

Orchitis. Patients having testicular atrophy from orchitis due to mumps usually are not impotent because the disease does not destroy the interstitial cells of Leydig. If the laboratory tests are equivocal and the doctor has any doubts, he can resort to a therapeutic trial with testosterone. If there has been no response after three weeks of therapy, the impotence is not due to a lack of testosterone.

Fröhlich's syndrome. This indicates pituitary failure; gonadotrophic hormone secretion is very low or absent. The symptoms can be relieved by anterior pituitary substance, and sometimes testosterone may have to be given simultaneously. The dosages depend upon the individual's response.

Adrenal causes. The diagnosis of adrenal tumor and adrenal hyperplasia may be difficult. It necessitates hormone studies, pyelograms, perirenal air insufflation, ruling out pituitary tumor, exploratory surgery, and trial with adrenal hormones. The presence of pituitary and adrenal pathology can usually be ascertained from the patient's history and physical examination. Few of these patients come to the doctor primarily because of impotence. Fortunately, the incidence of this disease is greater in women than in men. A discussion of pituitary and adrenal abnormalities and their treatment is beyond the scope of this paper but has to be mentioned in connection with organic causes of impotence.

Feminizing interstitial-cell testicular tumors. Although rare, they do cause impotence. Such tumors are usually not discovered until there is enlargement of the testicle.

Leriche's syndrome.[2] When impotence is associated with intermittent claudication, aching in the thighs, coldness and discomfort in the saddle area, weak or absent dorsalis pedis pulses, and abnormally cool lower extremities, Leriche's syndrome is to be suspected. Aortography will make the diagnosis, and arterial surgery will correct the symptoms. If the hypogastric regions are left intact or are made patent by the surgery, potency will usually be restored.

Diabetes. Diabetic persons are prone to impotence. Peripheral neuritis or premature atherosclerosis of the pelvic arteries may cause the impotence, but in some, the explanation is not known. Vigorous and continuous management of the diabetes is the best preventive; however, men with a severe and brittle form of the disease are the most susceptible. A diabetic person can have functional impotence, but the doctor must always give a guarded prognosis when treating an impotent diabetic.

Pernicious anemia. By virtue of combined cord degeneration, pernicious anemia causes impotence. This can usually be prevented by early, continuous, and adequate therapy. Even if neurologic signs are present, many such patients can be relieved by proper treatment of the primary anemia.

Drugs. The physician should always inquire about medicines which the patient may be taking. When possible, antipressor drugs, other than those that produce impotence, should be tried. Sometimes this does not result in an adequate response of a lower blood pressure. These patients must decide whether they want to be potent with high blood pressure or impotent with a reduced blood pressure. Whenever impotence has occurred secondarily to the use of antipressors or tranquilizing chemicals, potency does not always return after the medication has been discontinued. This usually means that a functional problem may exist and the patient should be treated by functional methods.

Trauma, radical surgery, or irreversible disease of the nervous system. When patients are permanently impotent from such causes, the only recourse is to use some form of a penile splint. I have had but one patient who considered the use of a splint satisfactory. The use of internal splints made of cartilage or plastic may be better. The patients in whom this form of splinting has been used have admitted they can make a penetration but none of them describe their sexual satisfaction in glowing terms.

Benign prostatic hypertrophy. Frequently a prostatic adenoma causes unwanted and annoying nocturnal erections. If a patient is impotent before prostatectomy he will usually be impotent after surgery, and, conversely, if he is potent before the prostatectomy he will usually be potent afterward. This seems to be more usual after transurethral resection. Perineal prostatectomy notoriously diminishes potency. We do not use this operation on potent men who have a satisfactory sexual life unless malignancy is suspected.

Inflammatory agents. Prostatitis, posterior urethritis, and verumontanitis are supposed to cause impotence. This is not true, with the exception of hyperacute infections. Men with severe chronic prostatitis can be very potent; conversely, men with normal prostates can be completely impotent. Prostatitis and verumontanitis are more often the results of impotence and not the causes of it. Prostatic massage, urethral instillations, and cauterization of the verumontanum do not in themselves restore lasting potency. When the patient has had such treatment and there has been no response, he becomes more depressed than ever. This makes the treatment that much more difficult. Some patients do exhibit a return of their potency, but it is usually not long lasting. Potency returns when the patient takes a flight into health to avoid the necessity of the painful treatments. Some patients who have failed to get a proper response and, particularly, those who have not paid their bill will take a temporary flight into health after consulting another physician. This is done to discredit the other doctor and is actually a projection of the patient's own hostility toward the first physician consulted. Also it gives the patient a reason, in his own eyes, for not paying the first physician.

FUNCTIONAL IMPOTENCE

Functional impotence is not, in itself, a disease; it is just one of the symptoms of the underlying illness. Unfortunately, 90 per cent of impotence is of functional origin. This explains the failure of urologic manipulations and unnecessary hormone injections. There are certain patients, however, who can be treated only by these latter modalities. Their use will be discussed later in this paper.

The doctor must have some working knowledge of the psychodynamics of impotence before he can treat it successfully. As a general rule, there is no single cause of impotence; the etiology is protean. A patient may describe some one event that is supposed to have caused the impotence. Some examples are previous venereal disease, vasectomy, and mild trauma to the genital area. One of my patients had jumped out of bed to get a contraceptive and broken a little toe. Naturally, he had lost his erection because of the pain, but he had been impotent from that time on. The incident triggered the neurosis but did not cause it.

Impotence is often a manifestation of a man's failure to achieve his goals in life. Sometimes these goals are beyond the individual's capacity, but, not uncommonly, the goals are so high as to be unobtainable by any mortal man.

Senoussi and associates[3] made a very comprehensive study to find a common denominator for impotence. Every physician who wishes to treat impotence should read this excellent treatise. For their study they compiled a list of 360 questions that could be answered "yes" or "no." Of the questions, 290 dealt with emotional and psychologic factors and 70 questions were in reference to physical complaints related to organic factors in impotence. The authors found 3 main factors that predominated in men with functional impotence.

Reaction to female rejection. The wife is blamed for her negativistic attitude. The man's early sexual experiences were with older women. These experiences placed no obligations or demands on him and set the precedent for sexual relations without concomitant responsibilities. In later adult life, obligations and demands made by his sexual partner created a conflict resulting in withdrawal or feelings of rejection. This man is always hypercritical of his sexual partner and, at times, may have reason to be so. However, he fails to appreciate his own role in producing undesirable responses from his wife or sweetheart.

Flight from the male role. This man experienced difficulty with social and sexual incompetence. Early in life, he experienced humiliation from shyness, poor appearance (sometimes this is not completely true), criticism, ridicule, and rejection, particularly from women. He cannot love deeply and, therefore, cannot accept love. Sexual intercourse is usually a test of his virility and not the thrilling experience it should be. Most of these men have several marriages and divorces.

Reaction to male inadequacy. This man does not have personal security. At an early age he learned to worry too much about finances. He tends to live in the future. He is critical of himself and of his sexual partner. He is jealous and envious. In order to be potent he must have a passive and submissive sexual partner. Feelings of rejection are common and are too easily aroused.

Stekel[4] has written 2 volumes on male impotence. This material is revealing, interesting, and instructive. Some of the physiologic concepts presented by Stekel conflict with those of our present-day knowledge. Nevertheless, the reader of these 2 volumes can broaden his knowledge of the psychodynamics and treatment of functional impotence. He presents 3 unconscious interpretations of the conscious "I can't," as applied to impotence. They are: "I won't," "I must not," and "thou shall not." It is obvious that these 3 factors are self-protective and are for the primary purpose of warding off the components of the 3 factors given by Scnoussi and co-workers. There are many smaller facets of all the major emotional factors concerned with impotence, and, while there is considerable overlapping, most of the patients will be found to have similar reaction patterns. In order to treat the patient, an understanding of the smaller components is essential.

FEAR

Conscious and unconscious fear is probably the most prolific source of impotence. Some of the elements of fear are not difficult to understand; others can be difficult or impossible to comprehend. Practically all of the impotent males exhibit fear until they become enmeshed in a fear of fear. The physician must try to determine the origin of the fear and, by explanation, do everything possible to allay these unwanted emotions. The patient may have to experience fear in the interviews with the therapist before he can benefit from the explanation or interpretation of his emotions. Simple explanations will work for the superficial fear but not for the deeper and unconscious anxieties.

Fear of failure. This almost always revolves around a test of the man's virility. Coitus is attempted by the man to prove he is a man and not for fun. If these emotional attitudes can be properly channeled, the patient should improve. Every time a man fails in sexual intercourse, the fear of future failure enhances the original fears. The more the fear the more numerous the failures, and the cycle becomes steadily more vicious. In the end, the man does not attempt coitus. The depression deepens and humiliation and defeatism become all-consuming.

The unconscious "thou shall not." A fear of divine punishment appears in men who have been reared in an atmosphere of unnecessarily severe discipline. In such a home, parents often carried religion to the point of fanaticism. This can be a reaction to the parents' own unconscious guilt. The moral code, inherent in some men who have been subjected to the above, becomes so high that no mortal could live up to it. Sometimes the patient may give the history of denying his religion. The self-inflicted punishment for this is impotence. Potency frequently returns to these men if they are encouraged to return to their religion. The fear of divine punishment is often intermingled with fear of the father because of an unresolved Oedipus complex and old, repressed, castration fears. Fear of divine punishment is most frequently aroused by extramarital love affairs or in men who will never perform satisfactorily outside of the marriage bed. The impotence keeps the man in line and, again, is a self-inflicted punishment.

The fear of interruption. Fear of intrusion by children or relatives can cause impotence or lack of response on the part of the sexual partner. Sometimes this can be a real threat, but too often it is a rationalization to explain the failure of erection or premature ejaculation. Some men will have an erection only when interruption is certain or the place inopportune. This is similar to the appearance of an adequate erection when the sexual partner is menstruating. The erection is not going to be used; therefore, it is harmless to have it. This is pathognomonic of psychogenic impotence.

The fear of damaging or harming the partner. This is a form of idolatry. Unfortunately, many women either knowingly or unconsciously fan the flames of this fear. One of the components of this is the fear of causing a pregnancy. When it is combined with religious teachings, the basic fear is compounded. More and more frustrations occur and the impotence is intensified. The esoteric power of religious fanaticism is illustrated in the following case.

The patient was a 29-year-old man who had not been able to have an erection for a year. He had had innumerable prostatic massages, urethral instillations, and hormone injections. A complete examination revealed him to be physically sound. Eventually he was convinced of the functional nature of his illness. Investigation of his psychobiologic history was then undertaken.

At the age of 4 years both his parents died. He was later adopted but when he was 11, both his foster parents had died. While living with his foster parents, he had developed a great attachment to his foster mother and had much feminine identification. There was nothing unusual from this time on until the autoerotic period of his life. At that time his masturbation fantasies were not those of possessing a lovely girl but of going through a delivery. At the time of ejaculation he fantasied he was giving birth to a baby! This indicated the extremes of his feminine identification.

Later he married a girl who was a passive, clinging-vine type of woman, the only type his ego could cope with. After they were married, they discovered the wife had a congenital absence of the vagina. She encouraged him to seek sexual satisfaction elsewhere. This he did and he promptly contracted gonorrhea. Later, he again contracted gonorrhea and from that time on he never sought the company of other women. This couple practiced coitus intrafemoralis for some time until she had a vagina constructed by plastic surgery. Although the vagina was adequate, when they first tried to use it the patient was impotent and had remained so up to the first time he was seen in consultation.

Further inquiry into his life revealed that his wife was a Catholic and he had become a rabid convert. The mechanism of his neurosis was now clear. Sexual intercourse, using an artificial vagina, was identified with contraception and was, therefore, a mortal sin. He had to become impotent for fear of divine punishment. This block was worked through with the patient and with the help of his priest. He regained his potency after three weeks of therapy. I saw this patient fifteen years later and he was still potent. In this patient, the uselessness of urologic manipulations is obvious.

Fear of physical injury from masturbation. This misconception can be the result of parental admonitions coupled with exaggerated and false statements made concerning that habit. There has been too much inaccurate reading material available on this subject which can only fortify utterings by the parents or the uninformed laity, or both. Statements that masturbation will cause insanity or that the ejaculation of semen siphons off cerebrospinal fluid, weakening the brain, are examples of the wild and inaccurate statements found in print.

Fear of venereal disease. This can sometimes be real if the patient has had venereal disease and has had a rough time with the complications. Often it is used as a rationalization to explain the source of the impotence. A similar fear is that of hastening old age by too frequent intercourse or previous masturbation. Fear generated by financial worries and, in the end, fear of fear may cause impotence.

Hostility. Fear of women and hostility toward them are almost the same emotion but on the surface can be expressed in different ways. These vary from shyness to outright antagonistic aggressiveness. The emotions of love and hate are very close. When hate dominates, a neurosis will develop and with it the ubiquitous symptoms of impotence. The woman must be cleverly feminine lest she arouse the defensive emotion of hostility in her sexual partner; this can produce impotence. Unconscious hostility can be masked by an outward display of affection, exaggerated concern and tenderness, and adolescent acts of familiarity. In general, any persistent feelings of resentment toward the sexual partner, because of real or imagined reasons, can cause impotence. Repeated failures at sexual intercourse intensify the hostile emotions projected toward the sexual partner. This will give support to the ego's defense by rationalization, which, in turn, is used to justify the conscious animosity. The cycle then becomes one of perpetual, increased discontent.

OTHER EMOTIONAL FACTORS

Disgust. Closely related to hostility is the emotion of disgust. It can begin by a feeling of contempt for an individual without a penis. It is just a short step away from here to identifying the excretory functions with the reproductive organs. This intensifies the emotion of disgust. Men who are too prudish, overly modest, and narcissistic are prone to the reaction of disgust. They have not learned that Emily Post has no place in the boudoir. Repeated sexual failures, lack of sexual satisfaction, or slovenliness can arouse disgust.

Fixation. Some men are always struggling with an incestuous conflict which began with a mother fixation and the unresolved Oedipus complex. Marital impotence can be the result of love, real or fantasied, for some other woman or potential sexual partner. When one of my patients was asked just what kind of a woman he most desired, his answer was: "a mother with sexual privileges." It is not common for a patient to make such a lucid statement concerning the dynamics of the underlying neurosis.

Homosexuality, manifest or latent. If the latent homosexual component of the libido is exaggerated, impotence will become bothersome sometime during the man's life. The corollary of this is that most impotent men have a larger component of homosexuality in their libido than potent men. Not all of the etiologic factors of homosexualism are known. At the present time the consensus is that it is a psychoneurosis. The primary determinant seems to be a sadistic predisposition toward the opposite sex. To prevent the acting out of the unconscious sadism, the ego turns away from the opposite sex and heterosexuality is repressed. This is a self-preserving and self-protecting mechanism, so the homosexual gives or accepts love from the same sex. Homosexuality has been defined as sexual feeblemindedness.

Lack of sexual education. Ignorance of the anatomy and physiology of the sexual organs, correct sexual technic, and average performance patterns leads to unsatisfactory coitus and, eventually, impotence. Even if there is an underlying neurosis, proper education of the patient and his sexual partner can result in a rapid disappearance of symptoms. The uninformed man listens to stories of sexual prowess that may be so exaggerated as to take on the coloring of a Paul Bunyan episode. The sexually insecure man then begins to feel more insecure and inadequate, and impotence may appear. Proper sexual education can reduce the incidence of impotence. Herndon and Nash[5] made a study of premarriage and marriage counseling which emphasizes the benefits of such counseling and also the lack of proper training on the part of physicians to cope with marital problems.

Inhibitions. The increasing impact and number of inhibitions stemming from our advancing civilization tend to depress potency, but the reaction patterns of the individual man are subject to much variation. The effects of religion and vocation on rates of sexual performance were studied by Kinsey.[6] He discovered that the rates of sexual performance of active Catholics and active Jews as a group were less than those of a similar group of inactive Catholics and Jews. As to vocations, the lowest sexual performance rates were among professional men, with the doctors of medicine having the very lowest rates. The highest rates were in underworld characters, whose sexual drive was 11 times that of the doctors as a group. The reason is not physiologic but is due to the larger number of inhibitions experienced by the professional men and the active Catholics and Jews. Sometimes it doesn't take much of an inhibition to depress a man's potency.

Unsatisfactory contraceptive measures, coitus interruptus, too much periodic abstinence, and constant abnormal sexual practices may be the cause of impotence. Freud[7] was very definite about the effects of coitus interruptus on sexual performance and the anxiety neurosis. Inhibitions can come from social and economic worries, second-choice wife, inability to accept responsibility, failure to achieve one's goals in life, death of a loved one, and infertility. The therapist must try to determine the number, kind, and force of the inhibitions for each individual patient. The factors of inhibition and fear overlap and, at times, seem to be one. Regardless of which of the 2 predominates, anxiety, in one form or another, may be produced.

Comments. From experience in treating impotence the physician will learn that certain types of men will have certain types of reaction patterns which can furnish clues as to the nature of the patient's inhibitions and fears. Some men are potent with any type of woman and under all circumstances, favorable or unfavorable. Some men are potent only with older women. Others perform only with the young and pretty. In some cases, if the highly desirable and attractive girl has a minor physical defect the man will experience difficulty with his erection. Some men pursue the average girl and can perform satisfactorily with this type. Too unattractive a girl is not desirable and too pretty a girl frightens them. Married men are often potent only with their wives. In order to have a good erection some men will choose an undesirable partner; they have to have a female who presents no threat of marriage or of mother identification. The superficial interpretations of the mechanisms involved in these choices are not difficult, but the deeper, underlying psychologic motives may be most difficult and, at times, impossible to ascertain. The necessity for deep or formal psychoanalysis will depend upon the patient's response and the severity of the underlying neurosis. The most unfortunate and most unhappy men are those who have never been able to have satisfactory sexual intercourse regardless of the partner and favorable circumstances.

I have tried to present and describe some of the more common causes of male impotence. Because of the protean etiology, it is almost impossible to cover all of the factors producing impotence. The literature on the subject fills volumes. There are theories and countertheories, but the physician must choose those modalities that produce the best results for him. Regardless of the opinions of the individual therapist, he must have a basic understanding of the psychodynamics of the symptom before he can be successful in its treatment. As the suggestions for treatment are presented, the doctor must constantly bear in mind the real reasons for the failure of erection, premature ejaculation, loss of erection before ejaculation, or no ejaculation.

TREATMENT

The suggestions for treatment can be carried out by any physician who is interested in the dynamics of impotence and will take the time to work with the patient. In this discussion, only the more superficial planes of the neurosis will be presented. The doctor who treats enough impotent patients will soon learn which ones will recover without the aid of a full-time psychiatrist. The physician must bear in mind that results are not 100 per cent satisfactory even in the most skilled hands. However, the percentage of satisfactory end results can be much higher than is seen with the customary urologic manipulations and hormone injections.

Urologic manipulations and hormones. Even though the physician recognizes that the impotence is functional, there are certain patients in whom the use of urologic manipulations and hormone injections is justified. There are men whose capacity for psychologic insight is too limited. This may be due to a low I.Q. or because of vehement resistance to an attack on the neurosis. Some patients just can't accept the idea that the failure of erection is due to a psychologic conflict. The best results with urologic manipulations and hormones will be obtained from those patients whose insight is limited because of a lack of intelligence. A corollary of this is that one seldom sees a moron who has any trouble with potency. Impotence is less common in those people from the lower stratum of civilization.

The usual method of treatment for the type of patient just mentioned is to employ prostatic massage and posterior urethral instillations. The chemicals used make little difference but should not be too bland. The most commonly used is silver nitrate in a 1 or 2 per cent solution. Another, which may be preferable, is 5 per cent Ichthyol in glycerin, which produces an astringent action but does not cauterize, as does silver nitrate. Both of these chemicals toughen the mucosa of the prostatic urethra and make it somewhat less sensitive. This is sometimes quite helpful when ejaculatio praecox is the predominant symptom. The treatments should not be more often than once weekly. They should be kept at a minimum so as not to have the patient acquire a genital fixation. These men are prone to blame a prostatitis for their difficulty and will go from doctor to doctor seeking a magic treatment that will cure their prostatitis, but their primary concern is their impotency.

Injections. Patients are often impressed by the use of injections and the physician can fortify this impression by extolling the virtues of the preparation. In the younger age groups, anterior pituitary substances are probably the best. Five hundred units can be given biweekly for two to three weeks, then once weekly for three to six weeks. If there is no response at the end of this time, there is not going to be any. Testosterone can then be tried. The dosages used are the same as given for the treatment for the eunuchoid patient. However, if there is no response after three weeks, it is useless to continue with this hormone. Occasionally the patient will return after the first injection of testosterone or anterior pituitary substance and report how good his performance has been. When this occurs within twenty-four hours of the injection, the physician should know at once that the response has been psychologic. It takes about seven to ten days for the effect of either of these hormones to produce a definite response. However, some patients can be kept potent by an occasional injection of either of these substances. If a patient can be kept happy by this form of flag waving, there is no harm in continuing it. The only word of caution is that the prostate should be checked at frequent intervals to detect any tendency for it to become hard. If so, no more testosterone should be given. The doctor should endeavor to keep the intervals between the injections as long as possible.

Much has been written about the male climacteric. There is no question that testosterone does make these men feel better. However, the restoration of potency occurs in but a small percentage. Most of the men in this age group who have symptoms and do recover their potency do so because of psychologic reasons. The tip-off is the rapidity with which they respond to the injection. The response is usually too rapid for the hormone to have had a chance to work. The physician must be guided by the response to therapy and regulate the dosage accordingly. Here again, the least amount of testosterone that will produce the desired effect is to be used. Mental depression is often the primary reason for their impotence. Testosterone will, in some of them, produce an elevation of their mood and potency then returns. The same effect can often be obtained by mood elevators such as methylphenidate hydrochloride (Ritalin), tranylcypromine (Parnate), and benactyzine, and, sometimes, by thyroid extract. All of these modalities can be tried.

Emotional support. The first step is to gain the patient's confidence by kindly and sympathetically listening to his problems. Any display of levity on the part of the doctor can ruin his chance of success. Dogmatic statements are to be avoided. The patient should be told how good he is and how healthy his genitalia are. He should be impressed about the normalcy of his body, in particular his sexual organs. This should be repeated again and again.

With men in the younger age group (below 55) it is often a good idea for the doctor to forbid any attempts at coitus for two to three weeks. This will take the pressure off of the patient to have intercourse and he will have more energy to use for romance instead of consuming it with reactions to fears of failure and repeated humiliation. One of these men may return within a week or so and tell the doctor that he has disobeyed him and has indulged in sexual intercourse. The patient is both surprised and pleased. The removal of the pressure to perform and the reaction to authority diminish the force of his unconscious inhibitions and erections occur. The sexual desire then becomes great enough to permit coitus in spite of orders to the contrary. This maneuver can be used in many patients and with rather startling results. If it is successful the physician is then in the driver's seat. Once there, he can do much to control the patient's impotence. Faith in the doctor is one of the strongest medicines there is, especially in patients with little insight.

Fortunately, most men have enough insight so one does not have to resort to the procedures just described. However, they can be used any time the physician chooses but with the knowledge that much of the treatment produces good results because of the psychologic impact on the patient. Men in different stations of life have reaction patterns that are peculiar to that station. Because of this the physician must be aware of some of the mechanisms peculiar to the station in question.

VARIATIONS IN INDIVIDUALS

The young single man. When the individual has never been able to have satisfactory coitus from lack of erection or ejaculatio praecox he usually has a severe, deep-seated psychoneurosis.[8] Patients of this type should have the routine history, physical examination, and basic laboratory studies. If they are found to be anatomically sound, they should be referred to a psychoanalyst for therapy. Any other form of therapy can have nothing but bad results.

There are single men who have previously had satisfactory sexual intercourse but have suddenly become impotent with their fiancée or other sexual partner. Failure of erection in these men usually appears after marriage has been contemplated. The symptom is then an unconscious resistance to matrimony and the impotence serves as a protection from marriage. There can be many reasons for this reaction: the responsibilities of marriage are too great, the intended wife may be the wrong girl, or the threat of marriage arouses hostilities and insecurities that result in impotence. Once married, most of these men will regain their potency because the neurosis no longer serves a purpose, namely, to prevent the marriage. If the physician believes the man is fairly sound emotionally and the girl in question will be a good wife, the doctor can suggest marriage. However, he should not be too dogmatic; if the marriage should be unsuccessful, he could be blamed for the mistake. Whenever a doctor advises marriage under such circumstances he should be aware that all may be well unless the trials and tribulations of the marriage become too severe. In that event, the man may again have impotence and use it as a means to justify a dissolution of the marriage instead of facing up to the responsibilities and behaving as a man should.

The divorced man. Frequently divorcés have difficulty with their potency, especially right after the separation. At this time the conflicting emotions can make a previously potent man an absolute failure as a lover. If the wife has sued for the divorce, the man's unconscious hostilities toward women in general are aroused and he will react with impotence. Impotence in the divorced man can be a protection from another marriage. The past, unpleasant experiences may have been so severe that the ego must protect itself against such a repetition. Impotence is the best weapon. It is not under the direct conscious control and the patient cannot consciously blame himself for his failure. Such men will often be potent with undesirable women, but they are impotent with a woman who could become a wife. Another source of the impotence is that the divorced man still has too much attachment to his former spouse. He has been rejected.

In treating this type of patient, the physician should work through the sources of the emotional block. Explanations of the blocks are helpful. Usually the patient must cope with his inhibitions in the presence of the therapist. When he has done this, the impotence will gradually disappear, but it may take some time. The doctor must refrain from interjecting too many suggestions and explanations too soon. If the doctor is patient and a good listener, the man will usually see the light and begin to regain his own self-respect. The greater the time interval from the divorce, the easier it is for the patient to respond to the suggestions and hints from the doctor.

Widowers. The man who has lost his mate has so much attachment to his former wife, the id considers the dead wife to be alive. Any marriage with another woman is bigamy and may never have the emotional charge that was experienced with the first wife. These men often drift from one woman to the next, always trying to find the ideal substitute for their first love. If the physician has some understanding of the mechanism involved he can, in the course of time, help the patient realize why he is impotent and guide him onto the correct path to happiness in another marriage. The doctor must always bear in mind that the unconscious never reacts in a logical fashion. Nothing is impossible. Anything that will interrupt this line of emotional reaction can produce the desired response. Direct explanations will work some of the time, but more often, the patient has to experience emotional catharsis before relief of the symptoms is achieved. The doctor must be a good listener and interject interpretations at the proper time. Eventually, if the doctor is patient, the man will gradually understand and cope with the false impressions from the unconscious. If the drive to acquire another mate is great enough, potency will be restored. Some widowers react with depression because they had unconscious death wishes against the wife, especially if she had been an invalid. This guilt must be removed.

Married men. The majority of men seeking treatment for impotence are married men in the age group from 35 to 55. It is with this group that most can be done by the general practitioner. There are many reasons why this age group contains more impotent men. The monotony factor begins to appear about ten to twelve years after the wedding; the couples have more excuses to find fault with their partners and marriage as a whole. Concomitantly, the waning sexual drive is beginning to be felt, permitting the inhibitions and hostilities to exert their undesirable influences. The economics of the home are often subjected to their greatest strain at this time. Domestic strife becomes more prevalent; the husband and wife are often at each other's throats with destructive criticisms. They quarrel and argue but do not understand the real reason for the strife. It is at this time that the marriage can be made or broken.

The doctor must never lose sight of the fact that the impotence is a means of escape or the attempted solution of a seemingly unsolvable problem. Whenever a married man desires treatment for impotence, there is almost always some domestic strife which must be uncovered. In the early interviews, the man may tell how much he loves his wife, how much she cares for him, and that they are compatible and enjoy the same things. As time goes on, the true picture will gradually emerge and what, at first, seemed to be an ideal marriage is replete with hostility, dissatisfactions, boredom, and ever-present quarreling. There are faults on both sides but one partner usually is more at fault than the other. The physician must not take sides or read his own troubles into the picture. In short, he must not confuse empathy with sympathy.

One of the prominent sources of conflict is finances. Some men have learned to worry too early and too often about money and have not learned to accept responsibility as mature men; their old insecurities and frustrations are aroused and impotence appears. The role of the physician in these cases can be most difficult. He can help the man to understand the real nature of the problem and then try to get him to lean on something besides material wealth. If these men could only learn that the best things in life are free, the battle would almost be won. When the doctor has been able to accomplish this, he can suggest a financial adviser to help the couple. Subsequently, the doctor can help them by constant, periodic, sympathetic, and kindly advice.

Many men have hostilities toward women in general, yet the wife gets the full impact. To localize the cause of the hostilities, which is, in reality, fear, it may take considerable time and patience on the part of the therapist. Many of the problems first began with the man's mother or sister. Whether it is an unconscious incest problem or the result of a domineering mother or sister, it is the task of the doctor to find out. When he is sure of his ground, the patient can gradually be made aware of the underlying conflict. Sometimes this is a very complex problem and the services of a psychoanalyst are mandatory.

Impotent men are often too passive and dependent. They are reacting against their dependent longings or giving in to them too completely. This results in bilateral destructive criticism and, eventually, quarreling. These men must learn the nature of their passiveness and what remedies to use to cope with the problem. The wives can be of great help. Their aggressiveness can be explained and steps taken to get them to tone down their demands and criticisms. They must be ultrafeminine but at the same time must not lose their own identity. When the doctor encounters an uncooperative wife or one who openly admits that she doesn't love her husband, the chance of any success is remote. Even in the hands of experts it is difficult and, too often, impossible. The people concerned must have the desire to overcome the problem, otherwise treatment is almost hopeless. Forcing one or the other of the marital partners to accept marriage counseling or medical advice usually results in a failure. Many times the partner who comes to the doctor is not the one who needs the most help.

When an impotent man complains about his wife's shortcomings, the doctor must try to find out if the complaints are valid. Both the husband and wife will have to be seen before any conclusions can be drawn. They can be seen separately and together, with the doctor acting as a referee. The physician must be extremely careful not to get involved with the personality defects. This is done by not talking too much or giving "wild" psychiatric advice to any patient.[9] Above all, he must not obviously favor one or the other.

The woman's rôle. It has been said, "The young wife is a mistress, the middle-aged wife a companion, and the elderly wife a nurse." The most successful wife is one who can be a mistress all of the time. After the marriage, the husband and wife may become careless about their appearance, manners, and the little but all-important niceties of living that enhance love. The man is no longer gallant, never tells his wife how much he loves her, and makes no attempts to be affectionate except when he desires coitus. In time, sexual intercourse is reduced to intravaginal masturbation. Both of the marital partners can become overimportant in their own eyes. Many of the undesirable and overcritical remarks can be the projections of their own ego. In these cases they should be made to see the necessity for withholding their disparaging remarks. They should be made to recognize that loving a person is being able to tolerate that person's faults. Too many women try to romanticize by picturing the husband as a knight on a white horse. Some women, especially the very pretty and beautiful, overvalue their femininity, making such severe demands in return for their love that no man could fill the bill.

There is frequently too much unnecessary and unwanted conversation during love-making. The offenders don't know—or have forgotten—that the kiss was invented to prevent unwanted conversation. Such unrelated remarks as "Did you close the door?" "I bought a new dress today," "When are we going on vacation?" or "Did you pay this or that bill?", made during sexual intercourse, will dampen the enthusiasm of any partner. This type of unwanted conversation is more often indulged in by the woman than the man. Any man who can maintain an erection under such circumstances is a real Samson. The guilty party must be restrained from making such untimely remarks and given some superficial explanation of the resistance to sexual intercourse that the remarks imply. Seductive acts and conversation by an interested wife can do much to fire the passions of her mate.[10]

Many women are too passive without realizing it or why. They do not take an active part in the actual love-making. Some believe that it is vulgar to display any form of sexual emotion. They have usually been reared in an atmosphere of sexual abhorrence. This results in sexual inhibitions that are not removed by any marriage ceremony. These women have to be educated in the facts of life and their husbands must be patient and understanding. Once the lady in question has learned her rôle in the art of love, she can then arouse her husband to the proper level of sexual excitement, and erection will usually be automatic. The Latin poet Ovid (43 B. C. to 17 A.D.) wrote a treatise on the art of love. Rules of conduct for both men and women are well-presented and are quite applicable today. Perusal of *The Art of Love* will probably shock the overly modest, but they can become enlightened, for there is little left to conjecture.

Naïvété of either partner. A frequent source of impotence and female frigidity is that of naïvété. Women usually admit to their ignorance, but most of the men think they have all of the answers and are loathe to admit a lack of sexual knowledge. It has never ceased to amaze me that men who have been married for several years can be so ignorant of proper sexual technics. They are deficient in the art of love or the mechanics of coitus, or both. In such situations, sexual dissatisfaction or failure is certain to appear. When the doctor is aware of naïvété or false modesty, or both, he can do much by presenting the facts to the couple involved. I usually recommend that both the husband and wife read *The Ideal Marriage.*[11] This book presents the subject as clearly as possible without distracting circumlocution. The patients are encouraged to ask questions concerning anything they don't understand or believe. In this way they can gain the correct knowledge and allay inhibitions resulting from false modesty and ignorance. The results can often be startling and rapid. The knowledge gained from this book is not a cure-all but, in my hands, has been invaluable. It is an excellent source of premarital advice and can prevent many problems that might arise. The following is a case of impotence in which naïvété played a major role:

The patient was a 28-year-old male who appeared to be in the best of health. He was a tall, well-built, handsome man. He complained of decreasing erections and sexual desire and, finally, total impotence. The symptoms had been developing for a little over a year. His wife was a pretty, cooperative woman. The sexual symptoms began some months after the birth of the second child. The patient had been subjected to pronounced sexual trauma by a homosexual when he was 9 years old. Trauma continued until he was in his eleventh year. The homosexual was a middle-aged professional man. In order to keep the patient quiet he had made dire threats which kept the patient from exposing him. Eventually the man was caught and was run out of town. There was nothing else out of the ordinary in the history.

When the patient was asked what the impotence meant to him, he stated it might be necessary in his case to prevent premature old age. He then went on to explain his concept of the male sexual apparatus and how it functioned. He believed the story about the "beans in the jar." That is, a man had so much ammunition; after it was gone, he would be old and completely impotent. Each ejaculation represented the removal of one more bean! He described his fears concerning all the ammunition that had been wasted by the childhood sexual trauma and masturbation. During the course of a few more interviews the guilt charge was removed from the childhood experiences and masturbation fears. This was followed by correct sex education. After six weeks the patient began to regain his potency and had completely recovered by the end of three months.

This patient may require some formal psychoanalysis at a later date, but he has had no further major problem with impotence. He is now twenty-three years post-treatment.

MECHANICS OF LOVE-MAKING

There are women who put themselves and their partners through such a precoital ritual that both partners lose interest in any form of love-making. Men are particularly susceptible to these repeated, unwanted, and usually undesirable ceremonies. Sooner or later they will react with impotence. The women haven't learned that when the man is in the mood, it is now, not forty-five to sixty minutes later. Redundant and lengthy preliminaries can torpedo many a firm erection. The reasons behind these precoital ceremonies are an unconscious, and sometimes not too unconscious, resistance to sexual intercourse. Resistance can be deep-seated and may require considerable psychotherapy. However, the majority of women can be made to see the light by correct explanations from the doctor. Playing "hard to get" may be all right at certain times, particularly in the premarital period or shortly thereafter, but it certainly loses its intrigue after several years of marriage. I do not imply that the woman should be sloppy and unattractive. The woman should be as sensuous as possible but should take care of all the details before being approached by her partner. The wise woman can usually sense the coming intention of her partner and is prepared. If, on the other hand, there is a sudden desire on the part of the man, all the precoital preparations should be dispensed with. This prevents loss of interest on the part of the man, it bolsters his ego, and it is one way of preventing the arousal of hostilities and insecurities. One of the more simple conflicts in this area is the failure to have all contraceptive devices or chemicals in place or ready to go at a moment's notice. Sometimes it is most difficult to get the woman to cooperate and the problems then mount. Basically, many of these women want to run the show, they want to wear the pants, and they usually have problems with masculine identification. They rationalize all of their reactions. The physician must not be deluded by this ego-protecting mechanism or too much intellectualization, or both.

A frigid wife is a fairly common source of impotence. Many of the problems just given have this as the true basis for the wife's behavior. A discussion of this problem is beyond the scope of this paper but the physician must keep it in mind at all times. Too often the attention is focused on the man, because of the impotence, when it is the wife who needs the treatment. To cure the man, the wife may need considerable psychiatric treatment.

Inverted coitus. Interrogation of the man or wife may bring to light the constant performance of inverted coitus. The occasional use of this procedure is common, but its routine use means that something is amiss. Certain women find they can have a satisfactory orgasm only when in the superior position. This usually means they have masculine identification. When continued inverted coitus is satisfactory to both partners, no symptoms may arise. The man in these cases is usually too passive and often will have satisfactory erections only when in the inferior position. As a rule, such a mutually satisfactory arrangement should not be disturbed. On the other hand, if the man is reacting with impotence the procedure should be altered. This may require a considerable amount of tact. Frequently a compromise can be reached by alternate inverted and orthodox positions.

Vasectomy. Whenever a contraceptive vasectomy is being, or has been, forced upon the man, he may react with impotence. In all such cases, the vasectomy should not be done until the man demonstrates a genuine desire to have it. If the operation has been done, an explanation of the hostility it has aroused may help. Giving the man moral support and getting him to accept the fact that he hasn't been castrated may bring about a restoration of his potency. Hostilities toward the wife may suddenly come to light and these have to be attenuated. Occasionally a reanastomosis of the vas will restore potency. However, I have had patients who became impotent after a vasectomy, and no form of therapy, including extensive psychoanalysis, was successful.

Lubricants. The use of an artificial lubricant may be distasteful to either partner. This can be a question of pride, lack of proper education, or the belief that it is too messy. The doctor can quell all these false concepts. The greater the ease with which the male makes his penetration, the less likely he is to have further trouble. If he can succeed on the first try, impotence doesn't carry quite the same terror. Again, this is treating the presenting symptom. Failure of treatment may mean that some form of more intensive analytic therapy is in order. Artificial lubricants are not a panacea but can be of great help.

IDOLATRY AND INFIDELITY

In the early periods of marriage or a love affair, a certain amount of idolatry is to be expected. Some men carry this to such an extreme that their lady becomes deified. This can result in impotence. The lady is placed on such a high plateau that she must not be touched for fear of defiling or harming her! The doctor must try to enable the man to see his lady as a human being.

Reasons for idolatry. The primary emotions can vary from superficial to a deep-seated neurosis. Some of the latter forces are usually present in every instance of pathologic idolatry, but it is only in the severely neurotic person that formal analysis may be necessary. The therapist should try to determine the reasoning behind this undue reverence. Sometimes all that is necessary is for the man to learn that the lady is very desirous of being made love to and that there is nothing harmful or defiling about it. Strong encouragement from the woman can do much to correct the man's perspective and restore his potency. Explanations of the anatomy and psychosexual physiology can enhance the recovery.

The physician should bear in mind some of the possible motivations causing idolatry. Sometimes the fear of harming the woman is a coverup for unconscious hostility and an impulse to harm the sexual partner. Idolatry can be the defense for repressed incestuous drives, which in the past had been directed toward a mother or sister. It can sometimes be the result of homosexuality. Whenever the doctor recognizes these severe underlying neuroses, he should refer the patient to a competent, psychoanalytically-oriented psychiatrist.

Impotence can be the result of repressed castration fears. These men show overt hostilities which are, in reality, a form of fear. Penetrating the woman can be symbolic of losing the penis. To keep this fear below the level of awareness, it is necessary for the man to be impotent. Some patients have farfetched and, often, quite bizarre delusions in regard to the vagina. Most of the men with this type of a basic neurosis will need some form of psychoanalysis.

Infidelity. A man's individual moral code may be such that infidelity is taboo, and any violation of it will often produce impotence. This incapacity can prevent infidelity or can be a self-directed punishment for having been unfaithful or for just attempting extramarital coitus. Male infidelity stems from several sources, the most fundamental reason being that polygamy has not, as yet, been bred out of the human male. This leads into the subject of monotony and explains why the critical time for most marriages is ten to eleven years after the wedding. Monotony is enhanced by poor adjustment in the home; unpleasantness and quarreling are the natural concomitants.

The middle-aged and older husband may be driven to seek a much younger sexual partner. This is done to try to bolster his failing ego and to convince himself that he is not as old as his chronologic age. The stimulation from the new and more sensuous partner may be enough to overcome the existing inhibitions. Where the unconscious "thou shalt not" exists, impotence will sooner or later become manifest—the more intense the feeling of guilt, the sooner and more severe the impotence.

Infidelity may be a reaction to convention and authority. Doing something on the sly produces a certain amount of satisfaction and stimulation. The majority of the men in this category have usually been brought up in homes where the discipline was very strict or fanatically religious. They often have a domineering wife. Many of them are in the higher educational brackets. Kinsey's[6] report indicates that men in the higher educational level tend to be unfaithful to their wives late in the marriage, while those of the lower educational level tend to be unfaithful early in the marriage but more faithful later. The doctor can usually recognize the mechanisms of most cases in which infidelity has produced impotence. He must gradually let the patient vent his hostilities and fears. After this has been done, some effort is necessary to correct the conditions of discord in the home. The wife must be interviewed so that both sides of the story are obtained. The doctor may need the help of a professional marriage counselor or a clergyman who is well versed in the mechanisms of emotional problems. Most of these cases of impotence will be corrected. In many situations, however, it is obvious that a divorce will occur, especially when the man has married the woman who is his second choice. The doctor must be most cautious about advising divorce even though he knows it is inevitable. He can try to prevent it by suggesting that the partners consider all of the consequences of their intended action. If the marriage is dissolved and the man still remains impotent, then the doctor can give more lucid explanations for the symptoms. When this has been done and the man has recovered from the ubiquitous emotional shock of divorce, his potency will usually return.

Impotence can be the result of the arousal of old insecurities and fears of inadequacy which make the man question his virility. He listens avidly to the sexual exploits of other men. Unfortunately, many of these tales contain much imagined sexual intercourse. In reality, they are recounts of sexual prowess embellished with mendacity. The man may then consult some of his intimate friends and again may get all kinds of answers—some true, some apocryphal. As the uncertainties increase, potency wanes and may fade completely away. The physician can do much to correct these impressions and allay the more superficial fears. The patient should be instructed to refrain from discussing sexual performance with men other than the doctor consulted. If the physician is sympathetic and persevering, and the neurosis not too severe, potency will gradually return.

THERAPEUTIC MEASURES

Overindulgence in food, smoking, alcohol, and tranquilizers reduces potency and may eventually produce a complete loss of erection. Correction of these faults and an explanation of the medical reasons will often help the man to be more temperate. Superficial explanations of the unconscious mechanisms of overindulgence can help the patient to overcome the bad habits or at least reduce their intensity. Here, again, the doctor must realize that the habits referred to can be the result of deep neuroses and severe insecurities. Insight should be delayed until the patient has thoroughly expressed his views and the therapist has more knowledge of the patient's problem.

Drugs. There are instances when drugs can be used to assist in the treatment of functional impotence. They are used primarily to reduce anxiety and seem to be more effective in the treatment of ejaculatio praecox. The chemicals are used only when the patient anticipates an attempt at sexual intercourse. They are not given continuously. Small doses of meprobamate or benzodiazepine (Librium) have been the most effective medications for my patients. The physician should always give the drug a good buildup to enhance its value. Any therapeutic modality that helps should be used.

Jellies. None of my patients have had any benefit from anesthetic jellies for the purpose of retarding ejaculation. Continuous use of these agents can produce an allergic dermatitis. Decreasing sensitivity with a condom may be of some value, but when effective in retarding ejaculation it is usually because of psychologic reasons related to fear of pregnancy or fear of disease. Ejaculatio praecox usually will not occur during masturbation or with any other method of onanistic sexual gratification. However, when the female is again approached, premature ejaculation takes place. The doctor can use this phenomenon to impress the patient with the psychologic nature of his problem and to make him less resistant to the proper psychologic approach.

Hypnosis. Today more and more patients ask about hypnosis in the treatment of impotence. At the present time the use of hypnotism is controversial. The experts in hypnosis extol its efficaciousness, some therapists take a more conservative stand, and some believe it is of no value and can be dangerous. In my hands it has not produced any lasting results, nor in the hands of the most expert who have treated some of my patients. It has been somewhat effective in the expansion of time for the treatment of premature ejaculation. I have used it primarily to break an impasse or to assist in the interpretation of dreams. The removal of any symptoms that are part of the ego's defense can have severe repercussions and has been known to precipitate a psychosis. The future will give the answer as to the use of this modality. Hypnoanalysis should not be used by the medical profession at large, only by the expert psychiatrist.[12]

When I have been able to relieve rapid ejaculation by hypnosis, the patient has gradually reverted to the old symptom or, worse, in his mind, he has had a complete failure of erection. Hypnosis does not remove the cause; therefore, it should cure nothing. However, it can alter conditioned reflexes which could bring about improvement. The hypnosis enthusiast will argue that many of the suggestions given here do little more than alter a pattern of behavior, even with deep analysis. This criticism is not invalid. However, removing some of the emotional sources of conflict, imparting correct psychosexual physiology to the patient, and having the patient gain some insight into the more superficial layers of his neurosis do attack some of the causes and reduce the power of the inhibitions peculiar to the patient in question.

Relief from depression. Most patients with impotence suffer from a mental depression, and the failure of erection is but a symptom and not, in itself, a disease. I have never seen an impotent man who was truly happy, in the full meaning of the term. Fortunately, most of the patients exhibit only mild to moderate depths of depression. These men can be treated as previously outlined. Mood-elevating drugs can be considerably helpful in the management of the therapy. Methyl-phenidate hydrochloride, tranylcypromine, benactyzine, and, occasionally, dextro amphetamine sulfate (Dexedrine) have been efficacious. A new chemical called nortryptiline may soon be available. It is claimed that this drug can relieve anxiety of the depression, counteract hostilities of it, and relieve somatic symptoms. If such be the case, it may be of considerable value in the treatment of impotence because anxiety and hostility are components of the underlying neurosis and depression. Experience with its use must await further clinical trial. When the mental symptoms of the depression are severe, the physician should know that he has a potential suicide to deal with. Patients who do not respond fairly soon should be referred for psychiatric care.

CONCLUSIONS

Satisfactory sexual intercourse is the climax of real love and domestic harmony. If the environment is healthy and happy, the bodies will function as they should. Loving someone is the adult emotion; being in love is more of the adolescent emotion. When real love is present, impotence is absent. Methods of coping with the more common problems associated with sexual difficulties have been clearly stated by Crane.[10] I can think of no better way to end this discussion than to give a quotation from his publication. It is well that the husband, wife, and physician understand the implication—"Marriages are made and kept alive in the bedroom, not in the kitchen."

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Treatment of Metastatic Pulmonary Malignant Lesions

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THE desideratum in the treatment of malignant disease is cure by complete eradication of the lesion while it is limited to its originating focus, although cures also are possible by *en bloc* regional node resection in cases in which the tumor has extended to these areas. If blood-borne extension has occurred, results have been less satisfactory and originally such extension was thought to be evidence of incurability. The most frequent site of metastasis in cases with blood vessel invasion is the lung because, with the exception of the areas drained by the portal vein, the pulmonary capillaries are the first ones encountered in malignant lesions.

HISTORY

Whereas previously, metastatic lesions of the lung were considered hopeless, today such is not necessarily the case. Since the first successful resection of a metastatic pulmonary lesion by Divis[1] in 1926, many patients have been similarly treated with satisfactory results. Although Krönlein[2] and Gerulanos[3] have been credited with the first resections of pulmonary metastatic lesions, their cases cannot be considered in the same light as our current concept of the treatment of metastatic pulmonary lesions because, in each of their cases, pulmonary resection consisted of removal of a neoplasm which had extended directly to the pulmonary parenchyma from the thoracic wall and was not blood-borne. Krönlein's patient was an 18-year-old girl who was operated on June 23, 1883, for a swelling in the region of the sixth rib in the axillary line. On December 10, 1883, the patient was readmitted with a recurrence and, four days later, the thoracic wall, together with the adjacent part of the lung, was excised because of direct extension of the lesion to the lung. There is no evidence in the original report to substantiate the opinion[4] that this was the result of hematogenous extension to the lung. The patient got along very well.

Gerulanos' patient was a boy, aged 15 years, who had received a blow to the right side of the chest in December 1896, and although the pain disappeared, several weeks later it recurred. The patient was admitted on April 6, 1897, with a swelling in the thoracic wall extending from the third to the seventh rib. It was diagnosed as a granuloma and was removed the next day. Two months later, a large recurrent tumor with direct extension to the lower and middle lobes of the lung was removed. The patient died the next day. The lesion proved to be a small round-cell sarcoma. Since both of these cases were examples of direct extension of the neoplasm to the pulmonary parenchyma, they cannot be considered in the same category as lesions that extend to the pulmonary parenchyma by means of the blood stream.

Although many consider the case of Barney and Churchill[5] to be the first successful excision of a blood-borne pulmonary metastatic lesion, Divis' case antedated it. Torak[6] performed pulmonary resection for metastatic neoplasm before Barney and Churchill's operation, although preoperatively the pulmonary lesion in his case had been considered a primary one. His patient, a 42-year-old woman, had had a hysterectomy for cancer in May 1927. In August 1929, she noted dyspnea and loss of weight, and in December, a large juxta cardiac mass was found in the right hemithorax. This was thought to be a mediastinal dermoid but, at operation in January 1930, the lesion, which was found to be within the lung, was locally excised and proved to be the same histologically as the uterine lesion. At the time of the report, in May 1930, the patient was well.

Barney and Churchill's case is unique in that their patient survived twenty-three years, dying of coronary disease.[7] In November 1931, their patient, a 55-year-old woman, was found to have a mass in the left pulmonary field. Because of

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evidence of a renal tumor, nephrectomy was done on April 18, 1932. The pathologic diagnosis was adenocarcinoma of the kidney. The pulmonary tumor, which was thought to be metastatic from the kidney, was treated by roentgen-ray irradiation, but it continued to enlarge. Therefore, on July 18, 1933, Churchill removed the tumor, which involved the lower portion of the upper lobe of the left lung. Wedge resection of the lung was done, and the lesion was found to be histologically the same as the renal tumor.

As is often true in medicine, one of the first reported cases had the longest survival. This is fortunate because such successful results encourage treatment of similar patients and thus enable us to evaluate the form of therapy. Less than one month after Churchill's successful operation, Röpke[8] successfully removed a previously diagnosed pulmonary metastatic lesion originating in a uterine carcinoma. At the time of the report, three and a half years later, the patient was well.

Since these original cases, probably more than 500 similar cases have been encountered. In 1961, Moersch and Clagett[9] stated that more than 400 cases had been recorded, and, since then, undoubtedly there have been another 100. They reported the largest series (169 operations on 165 patients). Seventy-three of their patients had been operated on more than five years before. There were 86 females and 79 males, ranging in age from 4 to 75 years, with an average age of 54 years. Fifty-four per cent were in the sixth and seventh decades of life.

SURGICAL INDICATIONS

The indications for removal of a pulmonary neoplasm in an individual who has been treated previously for malignant disease should be strict. Unless the patient is having severe symptoms, such as suppuration or massive hemorrhage, removal of a pulmonary lesion is justified only if there is hope of cure. In most patients with a pulmonary lesion who have been treated for malignant disease elsewhere, even though the lesion may appear to be solitary, there probably are other foci. However, the obvious pulmonary lesion may represent the only site of metastasis. Because it is impossible to state with assurance, after careful examination shows no evidence of malignant disease either in the original site or elsewhere, that the lesion is not the only site of metastasis, one is justified in presuming that it possibly is. However, it is extremely important to explain to the patient and the family that it may not be the only metastatic lesion and that probably there are other lesions.

Because at present other modalities of therapy offer little, if any, chance of cure, we believe surgical extirpation of these metastatic nodules is justified. It is the patient who must make the final decision after all the possibilities have been explained to him. Another cogent reason for removal of a pulmonary lesion in a patient who has been successfully treated for neoplastic disease elsewhere is that the pulmonary lesion may be primary and not metastatic. Kelly and Langston[10] reported that 18 per cent of 22 patients with solitary pulmonary lesions diagnosed preoperatively as metastatic were found to have primary pulmonary tumors at thoracotomy. Among 2,829 necropsies on patients with cancer, Warren and Gates[11] found multiple primary malignant growths in 6.8 per cent. They deduced that the chances of a second primary cancer developing were 11 times greater in a patient with 1 malignant lesion than in one who does not have cancer. Among 2,502 patients with pulmonary cancer observed at the Memorial Hospital, Cahan[12] found other primary cancers in 81 (3.2 per cent). In a ten-year study at the Mayo Clinic, encompassing 1,588 patients with primary tumors of the lung, Moertel and associates[13] found other primary malignant tumors in 65 (4.1 per cent).

Provided, therefore, that the patient, apparently successfully treated for a malignant lesion, subsequently shows evidence of a lesion in the lung, is in good physical condition, and has no evidence of malignant disease elsewhere, exploration of the chest with surgical removal of the pulmonary lesion is justified, because only in this way can one be sure that the pulmonary lesion is not primary (which is curable only by extirpation). Moreover, excision is the only method that offers any chance of cure if the lesion is metastatic. Robinson and associates,[14] in a questionnaire circulated to the members of the American Association of Thoracic Surgery, found that 91.8 per cent of those answering advocated resection of a solitary metastatic pulmonary lesion. They emphasized resection of as little tissue as possible, advocating subsegmental resection or lobectomy and, only rarely, pneumonectomy. This is sound reasoning, because it is undesirable to remove any more pulmonary tissue than necessary when operating for disease which may have already spread beyond the metastatic focus. Resection of the pulmonary lesion is justified only if the operation entails little risk. Accumulated experience indicates that this risk is extremely low, ranging in reported series from 0 to 8 per cent,[10] with most reports in the neighborhood of 1 per cent.[9,15]

PROGNOSIS

Opinions differ concerning the type of lesion that offers the best prognosis. Alexander and Haight[16] believed that sarcomas have a better prognosis than carcinomas. Of their 24 patients, 16 had carcinomas and 8, sarcomas. Six of the latter are living but only 6 of the 15 patients with carcinoma who survived operation are alive. The longest survival on record is twenty-three years; this was Barney and Churchill's patient who had a renal adenocarcinoma.[5] On the other hand, Jensik and Van Hazel[17] reported extremely poor results with treatment of malignant renal lesions. Two of their 6 patients died postoperatively, and no patient lived more than one and one-fourth years. They also reported poor results with treatment of sarcomas. Among 14 patients, 1 died postoperatively and only 3 of the other 13 are still alive: 1 at five months, 1 at seventeen years, and 1 at eleven years. Their best results were in tumors of the female genitalia. Among 7 cases there were 2 postoperative deaths. Four of the 5 who survived operation are alive: 1 at six and three-fourths years, 1 at four and five-sixths years, 1 at two and one-sixth years, and 1 at two years.

Kelly and Langston[10] reported better results in sarcomas than in carcinomas. Of their 38 patients with sarcoma, 11 survived more than two years. Of 65 with carcinoma, only 8 survived more than two years. On the other hand, Moersch and Clagett[9] reported a higher survival rate for carcinoma than for sarcoma. The seven-year survival rate in the former group was 25.6 per cent and in the latter group, 16.7 per cent. Strieder[18] reported a 41 per cent survival rate for carcinoma and only 33 per cent for sarcoma. Wilkins and co-workers[7] collected 254 cases in which operation had been performed more than five years before. The best prognosis was in urinary lesions (13 per cent five-year survival), followed by uterine (12 per cent), endocrine (10 per cent), mammary (6 per cent), and gastrointestinal (4 per cent). Of 17 patients with melanoma and 27 with miscellaneous lesions, none survived five years. In our series the survival rates were better in those with carcinoma than in those with sarcoma. The five- and ten-year survival rates in those with carcinoma were 38 and 33 per cent, respectively, whereas in those with sarcoma they were 14 and 0 per cent, respectively.

It is generally agreed that the longer the interval before the appearance of the metastatic tumor, the better the prognosis, although this is not universally true, as exemplified by Barney and Churchill's famous case in which a mass in the left pulmonary field was detected before the original primary tumor. Collins[19] was convinced that the prognosis is greatly affected by the interval before pulmonary metastasis becomes evident. He collected 180 cases of pulmonary metastases which were suitable for study of the rate of growth in the pulmonary neoplasm. Twenty-five were metastatic from the colon and rectum; apparently these grow the most slowly. He divided the rate of growth into equal thirds, arbitrarily taking those in the rapidly growing third as tumors having doubling time of thirty-five days or less, and those in the slowly growing third, more than seventy-five days. Among the 25 cases, the doubling time was more than seventy-five days in 20, between thirty-five and seventy-five days in 4, and thirty-four days in 1. The average doubling time in the entire series was one hundred sixteen days. The average duration of the pulmonary metastasis when first seen was one hundred twenty-seven months, with a range from sixty-four to two hundred twenty-five months.

Among others who also believed that the longer the interval between primary removal and appearance of metastasis, the better the prognosis are Dor and associates[20] and Groves and Effler.[21] Only 3 of 13 of the latter's patients in whom the interval between primary operation and appearance of the pulmonary lesion was five and one-half years or less were alive. One could not be traced after two years. All 8 in whom the interval was more than six years were living. Moersch and Clagett[9] reported a three-year survival rate of 13.6 per cent in those in whom the interval between resection and appearance of the metastatic lesion was less than one year, 40.7 per cent for an interval of from one to four years, and 44.4 per cent when the interval was more than five years, or an average three-year survival rate of 35.4 per cent. Of 40 patients of Wilkins and associates[7] who had the primary procedure less than five years before the pulmonary operation, only 10 per cent survived five years, as contrasted with 40 per cent of 20 patients in whom the interval between the appearance of the tumor and the original operation was more than five years. Of 7 of their patients who had the metastatic tumor removed before the primary lesion was known, only 1 is still alive.

Chang and Niguidula,[22] on the other hand, believed that there is no correlation between the length of survival and the type of tumor. Although Strieder[18] stated that the interval between the original operation and the appearance of the tumor is of little significance, his statistics would suggest that this is not quite true. Of his 10 patients who were living, four or more years elapsed between appearance of the tumor and the original operation, whereas of the 10 who had died, in only 3 did the tumor appear this late.

Although our series is small, there seems to be some relationship between the interval before appearance of the pulmonary metastasis and the prognosis. Of 16 patients who are dead, the median interval between the primary resection and the pulmonary resection was thirty-nine months, whereas it was fifty months in the 9 living patients. This is particularly significant because the patient with the longest interval (three hundred months) died. Among the living patients, the longest interval between the 2 operations was one hundred nineteen months, and in 2 patients the 2 lesions were discovered simultaneously.

PERSONAL SERIES

Experience at the Ochsner Clinic consists of 25 patients on whom 28 operations were done, 3 having had 2 operations (see table). Eleven patients had sarcomas and 14 had carcinomas.

Of the 11 sarcomas, 8 were soft part sarcomas and 3, osteogenic sarcomas. Two of the 8 soft part sarcomas were crystosarcoma phylloides, 2 were fibrosarcomas, and 1 each, malignant mesenchymoma, liposarcoma, rhabdomyosarcoma, and angiosarcoma.

Of the 14 carcinomas, 4 were adenocarcinomas of the breast, 3 were adenocarcinomas of the rectum and colon, 3 were malignant melanomas, 2 originated in the testes (1 seminoma and 1 embryonal adenocarcinoma), and 1 each were undifferentiated carcinoma of the stomach and squamous-cell carcinoma of the cervix. The microscopic sections were again reviewed by one of us (W.T.M.).

Of the 28 operations, there were 11 lobectomies, 5 pneumonectomies, 5 multiple resections (lobectomy, multiple segmental resection, or lobectomy and segmental resection), 4 segmental resections or wedge resections, and 3 composite resections, consisting of removal of the thoracic wall, bony thorax, and pulmonary tissue. There were no operative or hospital deaths. Ten patients died within the first year. One has an incomplete follow-up but was known to be alive at the end of three months. Three died at three months, 1 at four, 1 at six, 2 at seven, and 1 each at eight, nine, and ten months. In addition to the 10 who died within the first year, there are 3 operated on less than a year previously who are living, 2 of whom have had

DURATION OF SURVIVAL IN 25 PATIENTS TREATED BY PULMONARY RESECTION FOR METASTATIC PULMONARY DISEASE

	Number of cases	*1 year or less*	*1 to 3 years*	*3 to 5 years*	*5 to 10 years*	*10 years or more*
Sarcoma	*11*					
I. Soft tissue sarcoma	8					
Malignant mesenchymoma	1		D–13			
Cystosarcoma phylloides	2	D–7	D–18			
Fibrosarcoma	2	D–4 D–8				
Liposarcoma	1			D–55		
Rhabdomyosarcoma	1	D–9				
Angiosarcoma	1				L–82	
II. Osseous sarcoma	3					
Osteogenic sarcoma	2	D–3 L–3				
Fibrosarcoma	1	LR–12				
Carcinoma	*14*					
Adenocarcinoma, colon and rectum	3	D–6	D–30		L–100	
Adenocarcinoma, breast	4	D–10	LR–13 L–24	D–47		
Undifferentiated carcinoma, stomach	1		D–15			
Malignant melanoma	3	L–3 D–3 D–7				
Seminoma	1					L–167
Embryonal adenocarcioma, testes	1					L–134
Squamous-cell carcinoma, cervix	1	D–3				

D = dead L = living R = with recurrence Numerals = months surviving no recurrence. Of the 12 living at the end of one year, 4 died between the first and third years (thirteen, fifteen, eighteen, and thirty months), 1 is living and well (two years), and 1 is living with recurrent disease (thirteen months). Two died between the third and fifth years (forty-seven and fifty-five months), 2 are living between five and ten years (eighty-two and one hundred months), and 2 are living more than ten years (one hundred thirty-four and one hundred sixty-seven months).

Although our group of cases is small, some observations seem worthy of emphasis. The poorest results were obtained in osseous malignant lesions. Of the 3 patients, 2 with osteogenic sarcomas and 1 with fibrosarcoma, none lived as long as three years. The best results were in patients with testicular tumors; in fact, both of our patients with testicular tumors are living more than ten years (one at one hundred thirty-four months and the other at one hundred sixty-seven months). Of the 2 living between five and ten years, one was 1 of 3 with carcinomas of the colon and rectum and the other had an angiosarcoma. Of 4 patients with primary adenocarcinoma of the breast, 1 died at six months, 1 has a recurrence at thirteen months, and 1 (twenty-four months) has no evidence of recurrence after multiple operations (the right middle lobe was removed, and approximately three months later the right lower lobe was removed). One patient with carcinoma of the breast died with recurrence forty-seven months after pulmonary resection. All except 1 of the 8 patients with soft part sarcomas are dead (1 each at four, seven, eight, nine, thirteen, eighteen, and fifty-five months). The 1 surviving patient, a young man with an angiosarcoma of the thigh, is well eighty-two months after pulmonary resection of a metastatic tumor. Of the 3 patients with malignant melanomas, 2 died at three and seven months, respectively, and 1 is apparently free of disease three months after the operation on the chest. A patient with pulmonary metastasis from squamous-cell carcinoma of the cervix died three months after pulmonary resection. Another patient with undifferentiated carcinoma of the stomach died at fifteen months. The shortest survival of the entire group was three months; the longest survival, one hundred sixty-seven months; and the mean survival, twelve months.

Fifteen patients were operated on more than five years ago, 8 of whom had carcinoma and 7, sarcoma. In the latter group the mean survival was ten and one-half months, the shortest being three and the longest, eighty-two months. In the former group the respective figures were thirty-eight, three, and one hundred sixty-seven months. The five- and ten-year survival rates in patients with sarcoma were 14 and 0 per cent, respectively, and in patients with carcinoma, 38 and 33 per cent, respectively.

Among the 11 patients treated by lobectomy, the mean survival period was thirteen months, 5 dying within the first year, (at three, four, seven, nine, and ten months), 1 dying between one and three years (at fifteen months), 2 living between one and three years (at twenty-two and twenty-four months, respectively), and 2 living between five and ten years (at eighty-two and one hundred months, respectively). Of the 5 patients subjected to pneumonectomy, 1 died at three months and 2 others at fourteen and thirty-seven months. Two are well at six and one hundred sixty-seven months, respectively. The mean survival rate was fourteen months. It has been suggested that a metastatic pulmonary lesion which requires pneumonectomy has a worse prognosis than one that can be removed by less radical resection, but this is not necessarily true. The mean survival of the 4 who had segmental or wedge resection was thirty months; 3 died at six, forty-seven, and fifty-five months, respectively, and 1 has a recurrence at thirteen months. This last patient will undoubtedly die of the disease. It thus appears that segmental or wedge resection, at least in this small group of cases, is not of much value. The mean survival rate of the 3 patients who had composite resections was seven months, but all died (at three, seven, and eighteen months). Of the 5 who had multiple resections, 3 died at eight, thirteen, and thirty months; 1 is living at twelve months, but with recurrence; and 1 is living without recurrence at one hundred thirty-four months. The mean survival rate was thirteen months. Of the 4 living longer than five years, 2 had lobectomy; 1, pneumonectomy; and 1, multiple resections. Although our group is small, it substantiates the opinion of others that the longer the interval between the primary operation and the appearance of the metastatic tumor, the better the prognosis. Among the 9 living patients, the interval between resection of the primary malignant lesion and appearance of the metastatic pulmonary lesion varied from the shortest interval (appearance and resection were simultaneous) to the longest, one hundred nineteen months, with a mean of fifty months. These respective values in the 16 dead patients ranged from simultaneous to three hundred months with a mean of thirty-nine months.

Of the 8 patients with soft part sarcomas, the

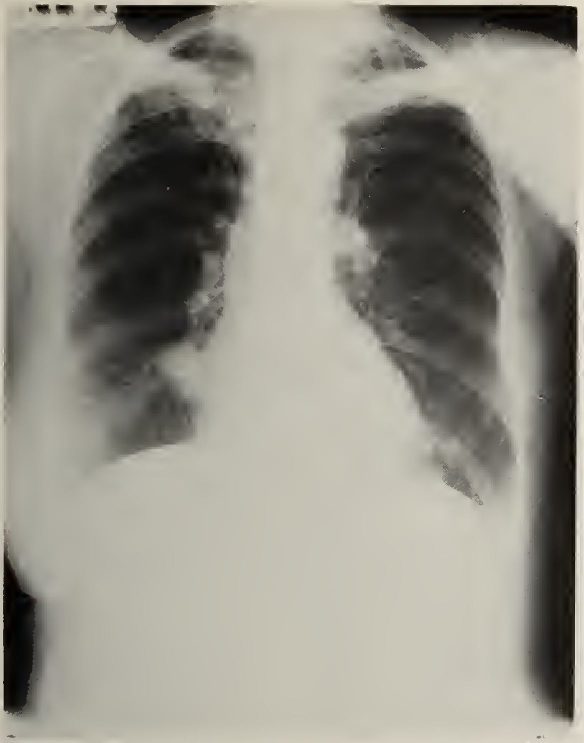

Fig. 1. Case 1. Roentgenogram showing metastatic lesion in right middle lobe of the lung from carcinoma of the breast

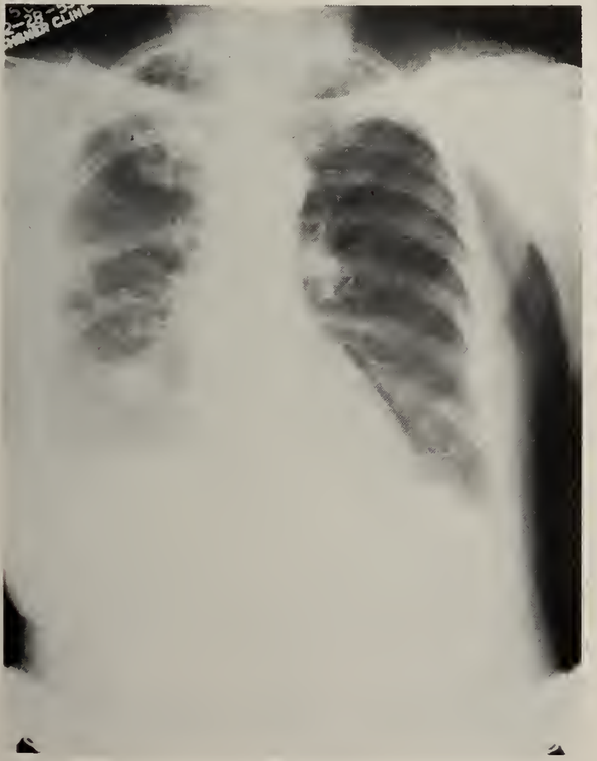

Fig. 2. Case 1. Roentgenogram made three months after figure 1, at which time the middle lobe was resected. Metastatic lesion in the right lower lobe of the lung

shortest survival rate was four months and the longest, eighty-two, with a median of eleven months; 14 per cent were alive at the end of five years. Of the 3 with osseous sarcomas, the shortest survival rate was three months and the longest, one year, but this patient is living with disease. The third is apparently well at three months.

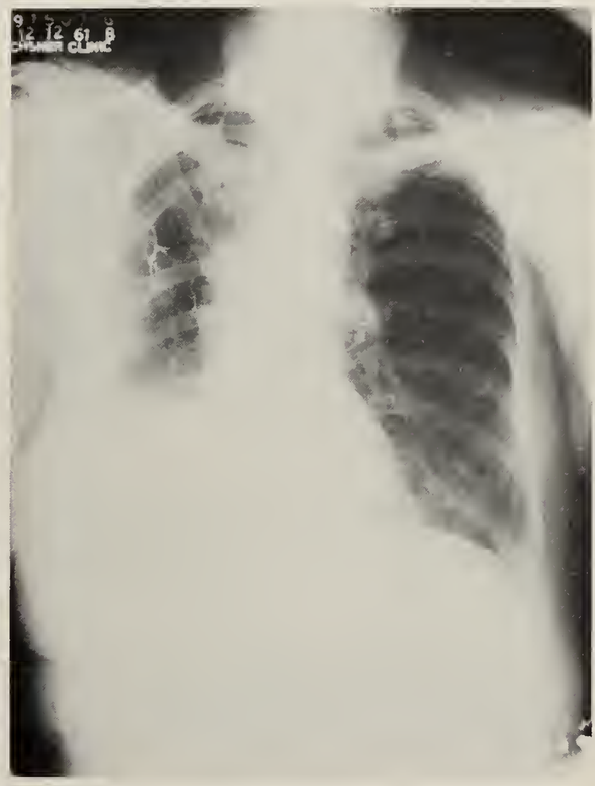

Fig. 3. Case 1. Roentgenogram made two years after resection of lower lobe of lung

Of the 14 patients with carcinoma, the shortest survival time was three months and the longest, one hundred sixty-seven, with a mean of fourteen months. The five-year survival rate was 38 per cent and ten-year survival period, 33 per cent. There were 6 malignant lesions of the breast, 2 of which were cystosarcoma phylloides. These were considered in the category of the soft tissue sarcomas. Of the 4 mammary carcinomas, the shortest survival rate was ten months and the longest, forty-seven months, with a mean of eighteen months. No patient survived five years. Of 3 patients with carcinoma originating in the colon and rectum, the shortest survival was six months and the longest, one hundred months, with a mean of thirty months. One of the 3 survived five years. One patient with carcinoma of the stomach survived fifteen months. Two patients had malignant tumors of the testes;

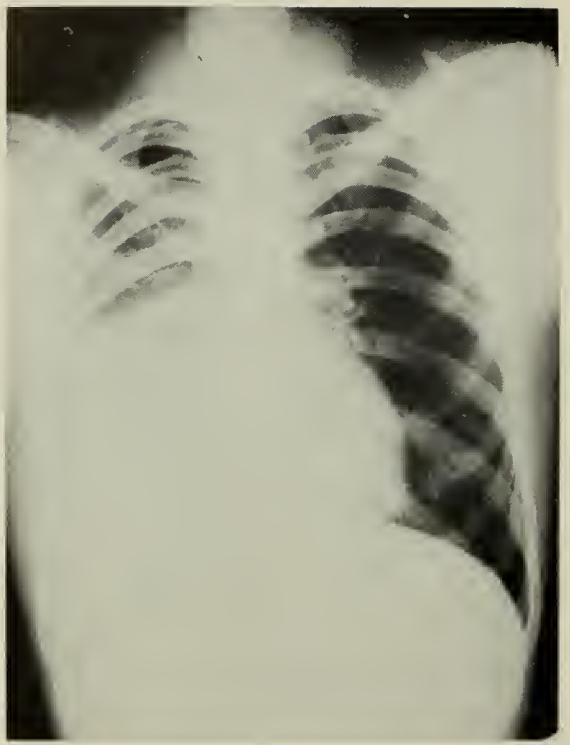

Fig. 4. Case 2. Roentgenogram made seven years after excision of angiosarcoma of the calf and intensive therapy to metastatic lesion of right lung

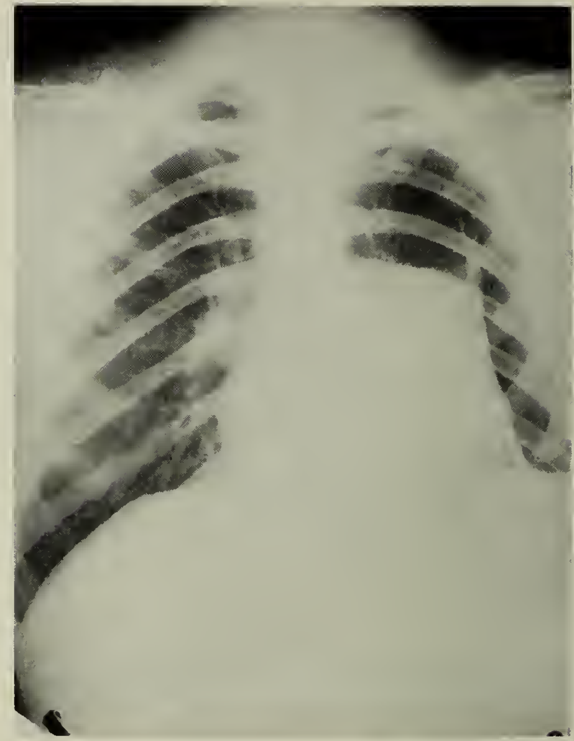

Fig. 6. Case 3. Roentgenogram showing metastatic tumor from testicular carcinoma four years after orchidectomy

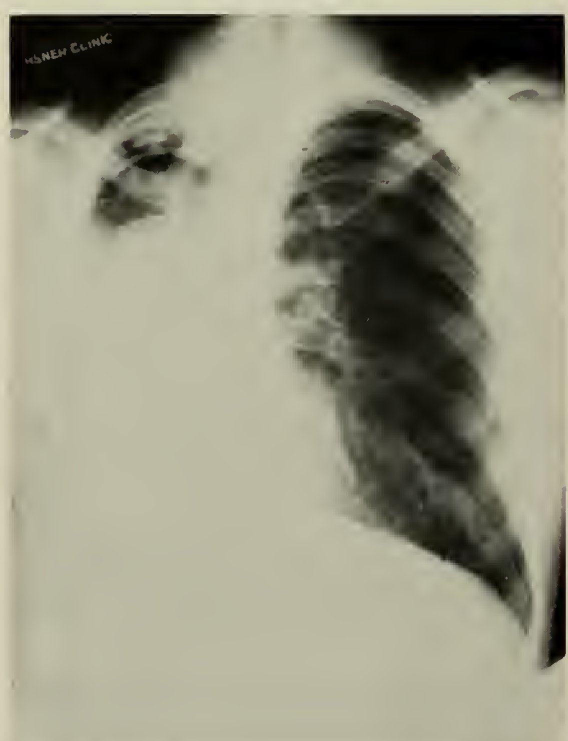

Fig. 5. Case 2. Roentgenogram made seven years after lower lobectomy for metastatic angiosarcoma

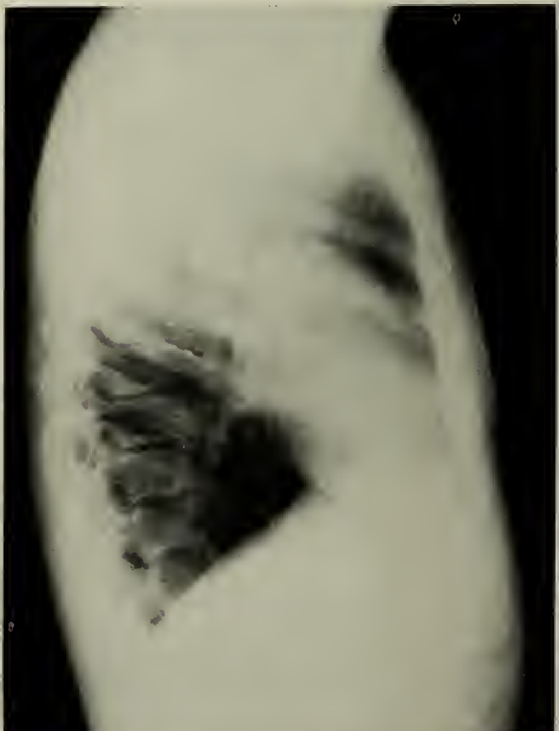

Fig. 7. Case 3. Lateral roentgenogram showing tumor in the region of the interlobular fissure

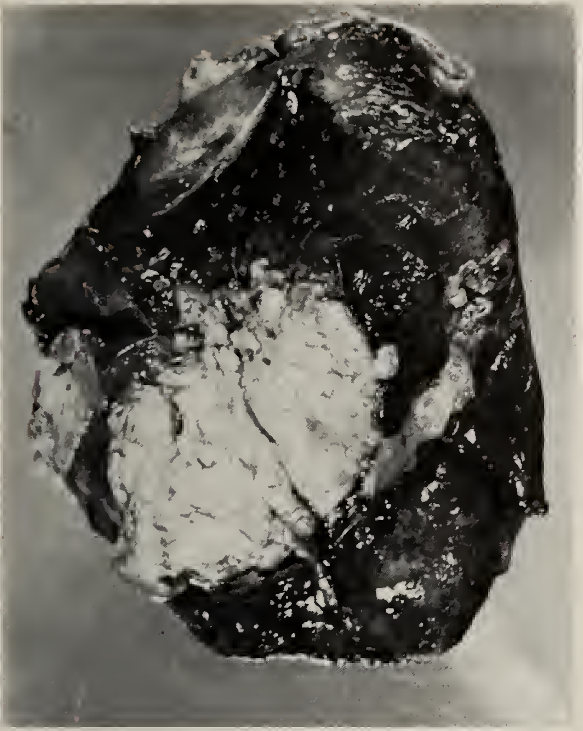

Fig. 8. Case 3. Photograph of section of lung resected, showing tumor involving both upper and lower lobes

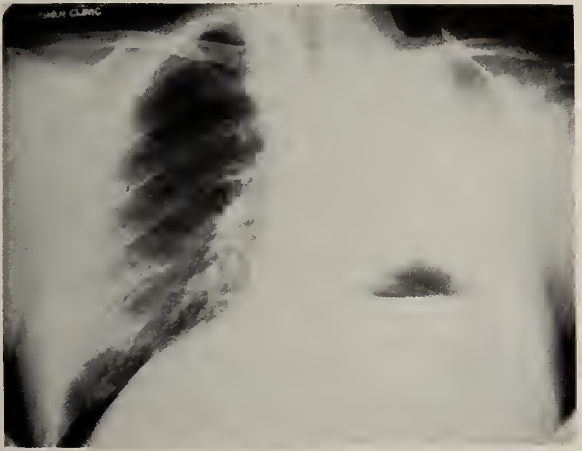

Fig. 9. Case 3. Roentgenogram made fourteen years after pneumonectomy for metastatic pulmonary lesion from testicular carcinoma

the shortest survival rate was one hundred thirty-four months and the longest, one hundred sixty-seven months, with a mean of one hundred fifty-one months. Of the 3 patients with melanomas, the shortest survival was three months and the longest, seven months. One patient with carcinoma of the cervix survived only three months.

CASE REPORTS

The following cases will be briefly described because of their special interest.

Case 1. A 53-year-old woman noticed a lump in the left breast several weeks before her first visit to the Ochsner Clinic on August 1, 1949. On August 3, excisional biopsy and frozen section revealed adenocarcinoma; radical mastectomy was performed. The pathologic report was grade II, scirrhous adenocarcinoma without positive axillary nodes.

In July 1959 routine follow-up roentgenography revealed a solitary nodule in the right middle lobe of the lung (figure 1). In October 1959, right lower lobectomy was done. Metastatic adenocarcinoma similar to the primary mammary lesion was found. Two months later, routine check-up showed another shadow in the right lower lobe which had not been observed or felt at the previous thoracotomy (figures 2 and 3). On January 8, 1960, right lower lobectomy was done for metastatic adenocarcinoma. When last seen in May 1961, the patient was well.

Case 2. In 1948 when the patient was 12 years old, an angiosarcoma was excised from the calf of his right leg. In November 1954, he began to lose weight and complained of dyspnea and pain in the right shoulder. At thoracentesis, 50 cc. of bloody fluid was aspirated on one occasion and 500 cc. on another. Roentgenography showed a lesion in the right lower lobe. This was treated extensively with roentgen-ray at Memorial Hospital, with considerable improvement. He consulted us on April 20, 1955. A residual shadow in the right lower lobe was noted and thoracotomy was advised (figure 4). On April 22, right lower lobectomy was performed for a residual, friable, metastatic angiosarcoma. The patient was asymptomatic when last seen on January 30, 1962 (figure 5).

Case 3. A 37-year-old man had had orchidectomy elsewhere, in 1944, for carcinoma of the testicles. At that time he was told that he had a tumor in his lung as well, which was treated with roentgen-ray irradiation for the next three years. In December 1947, he began to have pain in the left scapula and shoulder. He was first seen by us on April 8, 1948. Roentgenography revealed density in the left pulmonary field (figures 6 and 7). On May 6, 1948, left pneumonectomy was performed because of metastatic embryonal carcinoma of both lobes (figure 8). When last seen in March 1962, the patient was asymptomatic and had returned to active work (figure 9).

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THE HYPOTHALAMUS appears to have an important but nonspecific role in the pathogenesis of acute and chronic neurogenic gastric ulceration in cats. The basic cause of stress ulceration may be nonspecific dysfunction of the autonomic system, including the hypothalamus. A less important cause apparently is autonomic imbalance: the theory that lesions of the anterior hypothalamic nuclei allow the sympathetic system to act to produce gastric hemorrhage, while posterior hypothalamic lesions result in unopposed activity of the parasympathetic system and produce gastric ulceration. In cats, discrete lesions confined to the mammillary bodies and nucleus dorsomedialis of the hypothalamus do not affect the gastrointestinal tract. Anterior hypothalamic lesions, on the other hand, uniformly cause unlocalized gastric hemorrhage, while posterior lesions cause ulceration and, less frequently, hemorrhage. Chronic hypothalamic stimulation of the gastrointestinal tract in cats demonstrates a relation to several types of gastric hemorrhage and ulceration, without precise localization for production of changes. Stimulation in nearly all areas results in gastromalacia and hemorrhage. The ulcers resulting from anterior hypothalamic stimulation resemble the ulcers seen after posterior hypothalamic destruction. Excitation of the autonomic system seems to cause the proper combination of local gastric conditions, such as blood flow, acidity, and motility, to produce focal tissue breakdown. A study was made of the gastric effects of hypothalamic changes in cats. Discrete hypothalamic lesions were placed in 72 cats by electrocoagulation, and the effect of chronic hypothalamic stimulation on the gastrointestinal tract was determined in 30 cats by using permanently implanted electrodes.

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Chronic Debilitating Pain

This current effort to maintain the Section on Pain for The Journal-Lancet is being made at the request of Dr. J. A. Myers, chairman of the Board of Editors of the journal.

My plans to incorporate the area of relief of pain in the field of anesthesiology were instituted at the suggestion of the late Dr. William J. Mayo, who invited me, in 1924, to come to the Mayo Clinic and establish a department of anesthesiology. Enlargement of the title of this section of the journal to a section on "Pain and Distress" makes it possible to consider the effort to control both pain that does not have much possibility of relief and pain that can be relieved (distress). The policy that I announced some time ago in connection with this section—that it would be discontinued when good papers were no longer available—still prevails; in such an event, some of these quarterly discussions may not appear or the section may be dropped entirely. Obviously, good articles continue to be hoped for and are invited.

Chronic debilitating pain, whether it is terminal or not, needs to be studied. It is not considered good practice to treat pain or distress without an understanding of the cause of the symptom; however, if the cause cannot be found and eliminated, it becomes permissible to try to control the pain or distress. Patients suffering from terminal cancer are entitled to as much relief from pain as possible, particularly if this can be done without greatly impairing the patient's ability to take care of himself. The question of addiction is not as important in cancer as it is in other conditions. In my own experience, new measures are becoming available that give some hope that even the problem of shingles, or postherpetic pain, may be studied with the hope of providing some control.

I have recently been using a solution called PAB_2.* (I introduced this substance some years ago, but it was not made clear then that it gives the best results when used in conjunction with epinephrine.) This material contains procaine (2 per cent), ammonium sulfate (3 per cent), and benzyl alcohol (4 per cent). As an illustration of how it is used, I draw up 1.0 or 0.5 ml. of epinephrine into a 10-ml. syringe, pull the plunger back, and let the epinephrine cover the inside of the barrel of the syringe. Then I draw up 10 ml. of the PAB_2 solution, and the preparation is ready for injection. I have injected this material intradermally, but I do not advise this route of administration. Thus far I have seen no harm come from its use. Many times I have observed a fairly long period of relief from pain when the substance has been deposited around a pain pathway. The relief has sometimes lasted many hours or even days, and this has been a convincing means of identifying the pain pathway. I have recently used PAB_2 several times to inject trigger points or painful spots; when the injection was repeated one or two times, rather remarkably good results were obtained. Sometimes it restores the patient's confidence, bestowing a new outlook that enables him to accept his pain. Remissions have been obtained, with the pain eventually subsiding.

Recently, a pharmacologic means of relieving some cases of dyspnea was found by an accidental observation, although not enough patients have taken the agent to convince me of its effectiveness. The initial observation involved a patient who had had a pneumonectomy. She experienced post-thoracotomy pain, which I was able to bring under control by destroying the sensory nerves at the intervertebral foramen with the use of an insulated needle and diathermy applied to each of the affected nerve trunks after localization by x-ray. I had given this woman a few 2-mg. tablets of levallorphan (Lorfan) and when she began to take them she found that they gave her relief from dyspnea. Her husband, who had bilateral pulmonary tuberculosis with thoracoplasties, also began to use the tablets, taking one, for example, before he mowed the lawn. I have since had a patient with pulmonary fibrosis and another with a small hiatal hernia who claimed that they obtained relief from the distress of dyspnea when they took this drug. The patient who has the hiatal hernia had also fractured a hip six years before, and this had necessitated a pinning operation. She experienced pain for the following one and a half years. She underwent reoperation on the hip, and the pin was removed. Roentgenograms indicated that the results of the operation were good, but the pain persisted. I performed a block procedure on the anterior, lateral, and posterior frontal cutaneous nerves, using PAB_2 solution. She experienced good relief of the pain, which had been the result of muscle spasm. These nerves were subsequently sectioned.

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*Supplied by Abbott Laboratories

These are encouraging steps in our efforts to relieve chronic debilitating pain.

It should be noted, however, that when I employed several 2-mg. Lorfan tablets in treating a physician-patient, he experienced spasm of the sphincter of Oddi. Years ago I had given this same patient morphine preoperatively, and he had postcholecystectomy colic. I have tested this drug in rabbits and in a cat and observed no untoward results; yet, the cat does not tolerate morphine. Much work needs to be done to see if the afore-mentioned effect of Lorfan in dyspnea is the "mental mirror image" of the euphoria of morphine. The time for progress has not passed.

JOHN S. LUNDY, M.D.

BECAUSE PRECOCCYGEAL cysts sometimes undergo malignant degeneration and frequently become infected, excision is advisable even when the cysts are asymptomatic. Removal after infection has occurred is difficult and, in some instances, impossible. In patients without infection, digital examination of the rectum usually reveals a cystic mass in the precoccygeal zone behind the posterior rectal wall. Palpation of an infected cyst is frequently difficult because the contents have drained. The presence of an infected cyst is suggested by: recurring abscesses in the retrorectal space; several previous operations for a presumed anal fistula; drainage from an anal, perianal, or rectal sinus that does not have its origin at the dentate margin; or a postanal dimple and fixation and fullness in the precoccygeal region. When the principal finding is a draining sinus, the sinus is traced to the infected cyst and all infected material is excised. If fibrosis is associated, complete removal of the cyst is difficult or impossible; extensive sharp dissection of anal musculature may result in fecal incontinence. Marsupializing the cyst into the rectum is indicated occasionally, but fecal material may lodge in a deep pocket. A dorsal approach through a parasacrococcygeal incision is used for noninfected cysts. The incision is made on either side of the coccyx and lower sacrum and carried through the fibrous insertion of the pubococcygeus muscle; the coccyx usually need not be removed. Finger pressure from within the rectum forces the cyst into the wound, where blunt dissection frees it. Of 23 patients, results on operation were good in 11 with noninfected cysts but less satisfactory in 12 with infected or previously infected cysts.

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The Practice of Anaesthesia

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I am very fortunate, indeed, in having practiced anaesthesia during the period in which there has been so much change both in techniques employed and in the place of the anaesthetist—or anesthesiologist—in the surgical team. I would like to state that the term "anaesthetist" refers to medical practitioners in the United Kingdom synonymous with your anesthesiologists, for we have never had the benefit of nurse-anaesthetists. Although it was often the most junior resident who was expected to administer anaesthetics when I was a student, the giving of an anaesthetic has always been regarded as the duty of a fully trained medical practitioner. This period, since I was a student, has probably seen greater advances in surgery than any other and will be remembered in history as the Golden Age of anaesthesia and surgery.

I am fortunate, too, in having been associated with some of the legendary names in the speciality in my own country. As a student I was taught anaesthetics, and taught very well the rag and bottle methods of the past by Dr. Harry Featherstone, a founder of our Association of Anaesthetists. My postgraduate teaching, first of all, was at the hands of Sir Ivan Magill, who has done most to place British anaesthesia in the forefront, and later by Dr. Stanley Rowbotham, who was associated with Sir Ivan in the popularisation of endotracheal methods. At the same time I was associated with Dr. Claude Morris, who had the distinction of being one of the two first examiners for our Diploma of Anaesthetics.

With such a background I feel a little temerity in drawing any attention to myself because there cannot be many of us who have had the fortune to have worked with so many pioneers. I feel that anything I may have done to further the art of our speciality is a small achievement compared with the work done by these, the greatest names at present in our country, and with such teachers I ought to have absorbed some slight knowledge of the speciality!

Of course, when I first gave anaesthetics, techniques were very limited. The rag and bottle (as open ether was called) was the method of choice; it was seldom that nitrous oxide, oxygen, and ether were used. In fact, when I was a student, in my teaching hospital this technique was reserved for those patients who were too seriously afflicted for the undergraduate to anaesthetise or for those requiring endotracheal techniques, such as cranial surgery or surgery around the mouth. What a change we now see, for the open technique is seldom employed and even ether is seldom given a chance to allow its unpleasant odour to pervade the operating theatre.

The duties of an anaesthetist have become multiple. At one time he was just the person who applied the mask to the patient and left him asleep; he was expected to do little else but look after his airway—although some surgeons that I have known have, on occasions, leaned over the screen that separated the site of the operation from the anaesthetist and, after asking for the anaesthetic mask to be removed, have applied a towel clip to the patient's tongue and pulled it forwards. This manoeuvre was usually associated with a short lecture on general anaesthesia!

Times have now changed, and the anaesthetist regards himself as an essential member of the team—one who works with the surgeon and has certain proscribed duties and one who expresses opinions which are respected and even called for by his colleagues in the operating theatre.

In 1944, during my service in the army abroad,

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I had the honour of addressing a meeting of the Indian Association of Surgeons held in Lahore. During the course of that address I made some comments which I think are applicable today, so with your forebearance I would like to repeat them:[1]

> Anaesthesia has become a science as well as an art and the achievements of the past 25 years have made possible surgical procedures hitherto considered impossible; anaesthesia for chest surgery for which we owe so much to Magill, the absorption technique in which Waters of Madison was a pioneer, and the adoption of balanced anaesthesia, an advance advocated so strongly by Lundy of the Mayo Clinic, are developments as outstanding as many advances in surgery and without them the hazards of many modern operations would be greatly increased.
>
> Modern methods have meant a great increase in the patient's comfort; gone are the days of stifling inductions with masks and hours of sleeplessness and vomiting after the operation.
>
> The anaesthetist is a technician, a doctor, and a physiologist who practices toxicology; he acts as a trustee and is there to protect the patient's interests. He should decide, in consultation with the surgeon, on the best approach to the surgical problem involved. He should care for his patient's welfare before, during, and immediately after the operation, for he holds the patient's life in his hands and should return him to the ward after an operation in a condition as fit as possible so that his convalescence will be uneventful and the possibility of complications reduced to a minimum.

Again, later on in the address, I brought up the question of remuneration, and I would just like to quote one further paragraph:

> In order to attract the best postgraduates it must be possible for the good anaesthetist to earn as much in the aggregate as a surgeon or a physician. He must be able to take his place in the scheme of things, in just the same way as he must pay frequent visits to clinics in other parts of the world, and he can only do this if his position is assured. The services have done a great deal to raise the status of the anaesthetist by giving him rank and pay equal to that of other specialists, and this must be made to apply to civil practice as well. It does not matter if the anaesthetist works in a full time service or privately, he must have an equal reward for his years of study; otherwise the best students will not be attracted to the speciality. In the anaesthetic market, as in everything else, you will only get the anaesthetics you pay for.

And now, nearly twenty years later, the same principles seem to apply. Although many hospitals have departments of anaesthesia, not all of them do, and, in many, the speciality does not get the attention or consideration it deserves.

The duties of the modern anaesthetist have been greatly extended as time has gone by, but it is reasonable to group these duties according to: assessment of patients, giving of anaesthetics, postoperative care, diagnostic procedures, research, and development of equipment.

I think that we might discuss each of these groups in a little more detail.

ASSESSMENT OF PATIENTS

In many hospitals, it is now becoming routine that those who have been examined and recommended for surgery are examined by one of the anaesthetic team before being placed on the admission list. This has the advantage of enabling the anaesthetist or his deputy to order any further investigation that may be required before operation and will make the anaesthetist aware of any peculiarities or other disabilities of the patient before his arrival in the ward.

This procedure is particularly desirable in special institutions, such as dental, ear, nose and throat, and ophthalmic hospitals. In such hospitals the patients should be "screened" before admission, as, so often, the patient's general condition is overlooked.

It is also advisable for the anaesthetist who is to give the anaesthetic to see the patient on the day before the operation, soon after admission, so as to find out if any change has occurred in his condition since examination as an outpatient. At the same time he can order a sedative, as it is essential for the patient to have a good night's sleep before the operation. However, a hospital bed is not the ideal place for a rest cure. At this visit he should also order premedication as required.

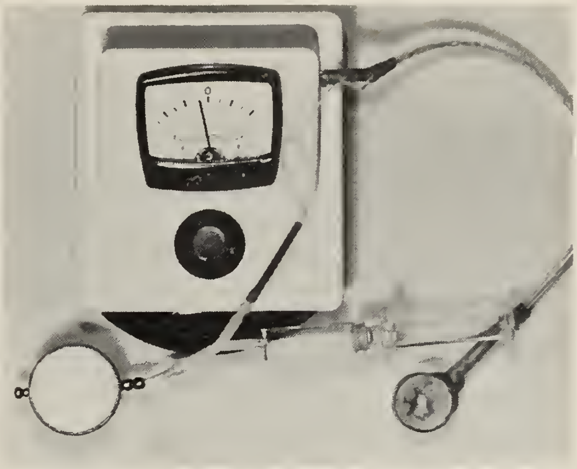
THE GIVING OF ANAESTHETICS

The giving of an anaesthetic is, of course, the most important duty of the anaesthetist. In some units this procedure is made more easy by a skilled staff and the availability of technicians and monitoring equipment which will indicate the condition of the patient with little or no trouble. However, it is more usual in the United Kingdom for the anaesthetist to be singlehanded and even to be without the assistance of a skilled nurse to take pulse rates and blood pressures. Until recently, many of the old school considered that taking the pulse, feeling the patient's skin, and looking at the colour of the blood, face, and lips were sufficient. One famous anaesthetist always used to say that he never worried about the patient unless his nose was cold; as long as the nose was warm, the patient was fit and standing the operation quite well!

Today, automation has reached the operating theatre, and one not considered to be a modern exponent of the art unless one is surrounded by electronic devices of all types. Even I have succumbed for the simple reason that one has to be more alert with the rapidly acting agents that are now in common use. I feel that if one employs so potent an agent as halothane and techniques such as the use of muscle relaxants, especially the short-acting ones like succinyl chloride in drip form, it is essential to have as much information about the patient's condition as possible. In addition, so often the anaesthetist is relegated to a corner of the operating theatre, with no chance whatever of keeping what has been termed "the human touch" of the anaesthetist with the patient. Under these conditions, automatic devices must be employed.

It has been my feeling that the most valuable of all these has been an efficient pulse monitor, particularly when one modifies it to combine the microphone with a small cuff which will indicate within a few seconds the systolic blood pressure. There are, of course, automatic devices, such as the Winston blood pressure follower, which will give a constant reading of the systolic pressure, but many of us are not in a position to have such expensive equipment or, even if we have got it, we cannot use it on every case. The simple type of cuff which I have made up for myself seems to be extraordinarily efficient and a great help in modern anaesthesia. The monitor gives a deflection on the scale and this deflection, once the meter has settled, will give an indication of the pulse pressure; in addition, by just closing the 10-ml. syringe, the cuff is inflated, the flow of blood to the finger tip stops, and, immediately on releasing the pressure in the syringe, the systolic pressure will be shown when oscillation commences. This oscillation will increase until what is called in French the "moyen" pressure is attained; soon the deflection will drop to about half, and this represents the diastolic pressure. It must be remembered, when using finger pressures, that the average systolic pressure at this level is usually 15 or 20 ml. below the ordinary blood pressure recorded by the arm cuff and a stethoscope, but in our work the comparative readings are of most value (see figure).

Of course the anaesthetist is responsible for maintaining the patient's welfare and good condition throughout the time of the operation, and he must be on the lookout for indications of shock or drop in blood pressure. It is often said by surgeons that the patient has only lost 1 oz. of blood or "with my technique they never lose more than a tablespoonful of blood," but all these statements are unreliable. The anaesthetist must work out for himself a comparative scale of blood loss according to the number of swabs and packs that have been removed, blood stained, unless the theatre staff has been trained to weigh all packs before and after use. Another point is that in removing large parts of a patient's body, such as a leg or the breast of a stout woman, these discarded pieces of flesh will also contain a considerable amount of blood, and, in such cases, this must be calculated when replacement therapy is decided upon.



Cotel-Keating pulse monitor with author's blood pressure cuff

It is of considerable help, when giving anaesthetics for major operations, when there are drips to be looked at, blood pressures to be taken, and the patient is under deep anaesthesia, such as is necessary in abdominal and thoracic operations, to have the patient connected to a respirator so that adequate respiratory excursion will take place throughout the procedure.

If the anaesthetist is not singlehanded and such additional duties are not thrust upon him, then controlled or assisted respiration by squeezing the bag is often a much more satisfactory procedure. The tension on the bag and the force necessary to produce an inspiration will give a great deal of information as to the patient's level of anaesthesia and the amount of muscular paralysis present. This cannot be found out so readily when the patient is being respired by mechanical means, and when mechanical means are employed, I, for one, consider that the patient should be put onto manual control at least every half hour so that the anaesthetist can get first-hand information as to the patient's condition.

Another point which is not sufficiently stressed is that when continuous succinyl chloride drips are used to maintain a state of muscular relaxation, it is advisable, if the patient is not breathing on his own, for the drip to be stopped every twenty minutes so that an estimate can be made of the time required before normal respiration sets in. If this procedure is adopted, it will be found that the number of patients having delayed recovery following such drips will be reduced to a minimum.

If the muscular relaxation in a major case has been obtained by means of curare, it is not my routine to inject neostigmine (Prostigmin) at the end, particularly if the operation has involved any anastomosis of the bowel. It is believed by some of us that the giving of neostigmine to reverse the curare action at the end of an operation may increase peristalsis, even when the neostigmine is preceded by atropine, and tends to produce leakage through the anastomotic junction being subjected to unusual strain. In cases where breathing is not adequate before leaving the theatre, it is my custom to continue assisted respiration until the patient is safe to leave. I would like to stress that before a patient leaves the operating theatre it is a helpful procedure to measure the patient's tidal volume by means of one of the respirometers which are now readily available.

I do not think it necessary for me to comment on the fact that the patient, whilst under anaesthesia, should be looked after so that he does not suffer trauma from movement or from maladjustment of any of the operating table equipment.

POSTOPERATIVE CARE

Postoperative complications, except for severe haemorrhage and the bursting of sutures, whether outside or inside the body, are those usually that are best treated by the anaesthetist. It is customary in these days to have the patient move about the bed as soon as possible. He should be given deep breathing exercises and encouarged to cough so that any secretions may be brought up. This is particularly true of elderly patients. Complications such as do occur may be delayed shock, postoperative haemorrhage, pulmonary collapse, and oedema of the glottis, all of which the anaesthetic team is in a position to help and to institute the most effective form of treatment. It is a matter of great envy to me and to many of my colleagues that in so many of the operating theatre suites in America there are adequate and efficient recovery wards. The recovery or intensive care ward is one of the most valuable innovations and has many advantages. I, for one, would advise that every patient who has received an anaesthetic or has been subjected to an operation should remain in such a ward for twenty-four hours. The special staff is in a position to deal with all emergencies. Where there is such a ward, a member of the anaesthetic staff should be readily available, both day and night, and, in fact, it should be arranged that the anaesthetist on duty shall live within the compound of the ward. The equipment of such a ward is a matter which you will all know about. The staffing of it is a matter of arrangement between the matron and the medical staff, and no hospital has ever suffered from having a recovery or intensive care ward in its operating theatre suite.

I would like to add that if patients are kept in such a ward for the first twenty-four hours, there will be great advantages. In the multiple-bedded ward, such as we have in our country, the patient who has recently returned from the theatre causes disturbance and disruption. This is particularly true when there are emergency cases at night and other patients find the noise upsetting.

DIAGNOSTIC PROCEDURES

It must be admitted that in the United Kingdom the anaesthetist is not so conscious of his value to a hospital as a whole by setting up a diagnostic clinic. There are various reasons for this. The most important, in my opinion, is that many physicians in our country—in fact, I think, the majority of them—are still inclined to think they are the best people to handle a needle. This is unfortunately reflected in the discomfort undergone by the patient and the lack of success in the treatment that has been instituted.

I well remember that during the past war it was seriously considered that spinal analgesia would have to be stopped in the more active areas of military operations. The "bush telegraph" reported 4 or 5 patients with intervertebral disc lesions, necessitating the institution of prolonged treatment following what was said to be spinal analgesia. So it was very difficult for us to persuade our superior officers that we should not ban spinal analgesia completely.

Fortunately, however, with a great deal of difficulty each of these patients was tracked down and in each one of them it was discovered that the injury to the intervertebral disc had followed a diagnostic lumbar puncture by a physician, and so spinal analgesia was acquitted! Another reason why diagnostic procedures have not been the perquisite of the anaesthetist is that in most hospitals, especially those that have a large number of emergency procedures, the anaesthetist is not in a position to spend the amount of time that is necessary to carry out this function satisfactorily, and, in fact, the whole of the anaesthetic department in smaller hospitals is pathetically understaffed. In addition to diagnostic procedures, relief from pain by injection methods can be carried out in such a clinic.

RESEARCH

I consider that the carrying out of investigations on new drugs on animals is the duty of a special research team. On the other hand, the trial of new material on the human subject is a matter for the most experienced anaesthetist available to undertake.

It is not, I think, in the best interest of the patient for the research-minded anaesthetist, who spends a great deal of his time in the laboratory, to dash into the operating theatre on the arrival of a new drug for human consumption. I believe the only way in which a first-hand impression of the action of a new drug on human beings can be obtained is when an experienced anaesthetist has had an opportunity of comparing the results of the new agent with those that have been used for many years.

Clinical research on the human being is a matter of extreme importance, and only the experienced anaesthetist can curb the enthusiasm of the reseach worker for anything and everything new. It is fortunate that when the most carefully screened agent of modern times, halothane (Fluothane), was released to the clinicians for actual use in anaesthesia on human beings, such a careful selection of anaesthetists was made by the Medical Research Council and the manufacturers.

DEVELOPMENT OF EQUIPMENT

The busy anaesthetist should be in a position to advise manufacturers of the type of apparatus that he finds most satisfactory. He should be able to encourage them to develop improvements and new types of equipment. It is unfortunate, however, that if the manufacturer finds that a certain type of apparatus is well received and selling well, there is little desire on his part to undertake the expense and time involved in improvements or the introduction of new equipment. In the United Kingdom there is little money available for the development of such equipment, with or without the help of the manufacturers, with the exception of those units that are developing the equipment essential to cardiac surgery and certain types of renal surgery. Unfortunately, I have found it extremely difficult to get manufacturers interested in even the smallest pieces of equipment. If I had not had personal friends connected with the management of such firms, I am afraid that there would have been little chance of any of my ideas being accepted.

I am afraid that these notes of mine on the modern practice of anaesthesia have been rather sketchy and also uninstructive, but I only hope that they will have helped to give a better understanding of the problems that beset us in our own country and of the ways in which we do try to give a satisfactory service to the profession as a whole.

This report is based on a paper given to the New England Society of Anesthesiologists, September 1962.

REFERENCE

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LONG-TERM ANTIBIOTIC prophylaxis usually prevents recurring attacks of lymphangitis in a patient with a lymphedematous extremity. The success of penicillin lends support to the theory that lymphangitis usually is caused by streptococci and penicillin-sensitive staphylococci. The antibiotic may be given in a single, intramuscular injection of 1,200,000 units of benzathine penicillin G once a month or orally as penicillin V or phenethicillin in 250-mg. doses 4 times daily for five days each month. Penicillin-allergic patients can be given erythromycin. Since lymphedema predisposes to lymphangitis, bed rest with elevation of the affected extremity should be ordered for two or three days; thiazide diuretics should be given 2 or 3 times a week to control swelling. Also important is adequate support in the form of a Pará rubber bandage on the legs, proper hand and foot care, and avoidance of minor trauma. In 5 patients, administration of prophylactic penicillin prevented recurrence of lymphangitis during periods ranging from six to thirty months.

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Lidocaine Used Intravenously for Analgesia During Therapeutic Nerve Blocks

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Procaine was introduced by Einhorn in 1905 and became the agent of choice for local anesthesia. Years later, Lundy[1] reported the analgesic effects of intravenously administered procaine in patients with severe pruritus associated with jaundice. Thereafter, procaine was used extensively by vein in patients with severe pain. Taylor and co-workers[2] administered it by this route as an adjunct to general anesthesia. Burstein and associates[3] found that procaine given intravenously had value as an antiarrhythmic agent in patients under cyclopropane anesthesia.

In 1949, Gordh[4] reported his clinical experiences with a new local anesthetic agent, lidocaine (Xylocaine). The anesthetic potency of lidocaine is superior to that of procaine, and many investigations were soon directed to its intravenous use. Gilbert and co-workers[5] observed that lidocaine given intravenously provided analgesia in patients with severe pain. Hitchcock and Keown[6] observed the antiarrhythmic properties of this agent and stated that it "is the only drug studied which is truly effective and is the only drug we use for this purpose. . . ." Weiss[7] also noted that the drug is effective in the treatment and prophylaxis of ventricular arrhythmias. Bartlett and Hutaserani[8] reported favorable results from the intravenous use of lidocaine to control postoperative pain. As with procaine, lidocaine has been used extensively by vein as an adjunct to general anesthesia.[9-11]

The many favorable reports of the analgesic effect of lidocaine when administered intravenously, as well as my own experiences, suggested the intravenous use of this agent during painful therapeutic nerve blocks. Painful blocks are those in which absolute alcohol is injected, as in lumbar sympathetic and splanchnic blocks. Splanchnic blocks are usually done to relieve intractable pain from malignant lesions in the abdomen, particularly in the pancreas. Lumbar sympathetic blocks are usually done for relief of vascular insufficiency in the lower extremities. The patient is often elderly and the risk of a major operation is considered too great.

METHOD AND MATERIALS

According to the current method, small doses of medication are given, before the procedure, to control apprehension. The patient is placed in a prone position and a needle is introduced into a vein on the back of the hand. Lidocaine, diluted to a 0.4 per cent solution, is administered by drip. An assistant observes the patient while the block is being accomplished. Since most patients also have a history of coronary and pulmonary disease, oxygen is administered during the procedure.

The lidocaine solution is allowed to flow at the rate of 60 to 80 drops per minute until 150 to 200 mg. of the drug has been administered. The patient is advised that he will not be asleep and will be aware of some discomfort. The landmarks are palpated, and a skin wheal is made to locate the point for the introduction of the needles. The needles are then placed, and their position in relation to the spinal column is verified by roentgenographic observation. The administration of lidocaine is discontinued while roentgenograms are being taken and developed. If the position of the needles proves to be sat-

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isfactory, the lidocaine drip is restarted. Another 150 to 200 mg. of the agent is given before the injection of absolute alcohol. During the procedure the patient is able to respond to questions and obey commands. When asked, he moves his extremities, which assures that no unforeseen neurologic deficit is developing. The alcohol is injected intermittently. Upon completion of the procedure, the lidocaine drip is discontinued. The total amount of analgesic agent used varies with the difficulty encountered while placing the needles; in my experience, it has ranged from 250 to 800 mg.

The technic has several advantages: (1) The patient is awake and cooperative. He does not move suddenly, so that major vessels are less likely to be punctured. (2) Lidocaine analgesia persists for hours so that the patient rarely complains of a sore back after the procedure. (3) The patient is cooperative when it is necessary to repeat the blocks. (4) The patient appears to tolerate the procedure well. The arterial blood pressure remains stable. The severe hypotension often associated with bilateral splanchnic blocks has not been a problem. Kao and Jalar[12] noted in the laboratory that intravenous administration of lidocaine consistently increased cardiac output and arterial blood pressure, which might explain clinical observations.

The only complication from the intravenous administration of lidocaine was the occurrence of minor muscle tremors in one patient. This was readily controlled by temporarily discontinuing administration.

CONCLUSION

The analgesia provided by the lidocaine given intravenously appears useful in those situations in which painful therapeutic procedures are required and the patient's cooperation is desirable.

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CALCULI of the salivary glands should be removed when easily accessible, even if symptoms are minor. Sometimes incision of the duct is necessary. Symptoms range from tenderness and swelling to a sharp, colicky pain and are usually brought on by eating. If the condition persists, the glands undergo fibrosis. The submaxillary gland is most commonly affected, but stones may also be found in the parotid gland. If symptoms are serious or stone formation recurs, the diseased gland should be removed after any acute infection has been treated with hot packs and antibiotics. If care is taken to preserve the facial nerve, even the parotid gland can be excised without serious consequences. The submaxillary gland was removed in 48 and the parotid in 17 of 180 patients with salivary gland calculi. All were cured without postoperative complications.

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Transactions of the North Dakota State Medical Association

SEVENTY-FIFTH ANNUAL MEETING

Bismarck, North Dakota, June 2, 3, 4 and 5, 1962

(Continued from the December 1962 issue)

Reference Committee to Consider Reports of the Committee on Medical Economics, Advisory Committee to Public Assistance, Division of State Welfare Board, Committee on Rural Health and the Governor's Health Planning Committee

Dr. A. C. Burt, chairman, presented the following reports and their discussions, which were adopted section by section and as a whole.

1. *Report of the Committee on Medical Economics.* Several meetings of the committee and sub-committees were held. The members are to be commended for a job well done.

A meeting of a sub-committee was held Feb. 2 and 3, 1962, in Bismarck to discuss programs related to Blue Shield fee schedules and their extension.

At a full committee meeting on March 3, 1962, a definitive program was accepted. This consisted of several phases, the first being fees for obstetricians. In order to arrive at these figures, the doctors doing obstetrics throughout the state were polled as to their feeling concerning fees. The majority felt that a desirable indemnity program would pay so much per delivery, with any excess office calls, and the pre- and postpartum care to be paid by the patient. A fee schedule was set up which will pay $70 for each case for Plan A, $90 for Plan B, and $110 for Plan C.

Fees for in-hospital medical care were discussed. In the past, internists have been deprived of income. After a conference with the actuaries, it was found that medical care could be increased as far as fees were concerned. This was resolved in the following manner: under Plan A, $9.60 would be allowed for the first day, $6.40 for the second day, and $3.20 thereafter. Plan B was altered to produce $12 for the first day, $8 for the second day, and $4 thereafter. Plan C was altered to produce $13.50 for the first day, $9 for the second day, and $4.50 per day thereafter. If these fees were to be increased the actuary felt that other fees should be left alone. As a result, the surgical fee schedule and those schedules referrable to pathology and radiology were not changed.

Previously, there had been much discussion concerning a new Plan D offered by Blue Shield. After conferring with the actuary it was felt, and he agreed, that no relative value schedule would be assigned to Plan D, and that the usual customary fee for services rendered would be paid for this particular economic group.

The committee accepted the principle that Blue Shield be offered to people over 65 years of age, and that Plan A schedule would be adopted, providing these people were in the proper income group. All these recommendations have been passed by the Blue Shield board of directors and are in effect as of June 1, 1962.

The reference committee pointed out that the Medical Economics Committee has been successful in negotiations with the North Dakota Workmen's Compensation Bureau, with physicians obtaining the usual fee.

This portion of the report was adopted.

Dr. Hanewald: Regarding the Medical Economics Committee report, I believe that anyone doing obstetrics feels good about the fee changes, but I would like a little clarification. To go back to the fee plan, in 1955 we received $100 for a delivery, then it came down to $80, and now we are getting $90. What is the difference between prenatal and postnatal care and preoperative and postoperative care? It is hard for me to explain to patients how we can do one and not the other. These patients are also probably a little more pressed for money than the older age group. I think we should figure these patients as continued, satisfied subscribers, rather than to put them aside and contribute to the older age group.

Dr. Burt: That is a question that is almost impossible to answer. This particular fee for obstetrics care never was meant to involve prenatal visits and postpartum checkup. It seems to have varied some from locality to locality. Actually, this is not for all practical purposes an idemnity plan sold to the people on this basis. For any particular delivery they pay so much toward the usual fee of the doctor. This has been a headache for years. I do not know if it ever can be solved. But the people seemed to feel that they would be better off with an indemnity plan. It is not perfect, but I do not know the absolute answer.

Dr. Richardson: It was stated in this report that the obstetricians were polled throughout the state. There seem to be a lot of obstetricians in our district who never heard about the questions. There is a question raised as to how this came about.

Dr. Peters: I never have seen any letters, but I know that letters were received from various obstetricians.

Dr. Burt: I presume we have records as to how many were sent and how many were returned. But that was the basis the Medical Economics Committee worked on at that time.

Dr. Porter: I am on the board of directors of Blue Shield. This has been a hot potato, and we felt we should have an indemnity plan for obstetrics because there is no other illness that lasts nine months. If you wish to accept this you may do so; if not, any office calls or laboratory fees will be billed extra. Blue Cross-Blue Shield premiums are at the maximum permissable level. We do not have the money to take care of these patients without raising the premiums, and this we can not do.

Dr. Burt: There was no intention of having the obstetrician fees paid in full.

This portion of the report was adopted.

Dr. Hanewald made a motion, seconded by Dr. Ordahl, that the Blue Shield board continue to consider the younger element on a costwise basis with the hope that eventually it will arrive at a satisfactory fee.

Dr. Porter: I believe this should be referred properly to the Committee on Medical Economics and not to the board of directors of Blue Shield.

Speaker: This motion can be brought to the attention of the liaison committee of Blue Shield.

Dr. E. J. Larson: I am a member of the Obstetrics and Gynecology Society and I received a letter and form on this proposal. I also have been on the economics committee, and this information was brought before the committee and discussed very carefully. This was discussed further with the Blue Shield board, and I think the matter has been well handled and that a democratic attempt was made.

Speaker Christoferson: If this was brought before the Blue Shield board it could be brought back to the House next year. I understand this has been discussed extensively by the Blue Shield board and the Committee on Medical Economics.

The Speaker asked for a vote on the motion by Dr. Hanewald. The motion was lost.

Dr. Burt: The reference committee has reviewed the report of the Medical Advisory Committee to the Public Welfare Board. This committee had one meeting on September 30, 1961, with representatives of the Public Welfare Board. After discussion, the committee recommended that when a procedure was done on a house call, such as a thoracentesis or a paracentesis, the Welfare Board should be billed for both the house call and the procedure.

Discussion of the MAA program was tabled, as it was felt it was in the realm of the Medical Economics Committee's business.

The use of gamma globulin was discussed, and it was felt the Welfare Board need not purchase it, but that it should be used, probably, if available from the Red Cross or the Health Department. It was felt that general vaccination for influenza for aged recipients was not practical at this time.

The Welfare Board was advised of the availability of medical review committees set up in each district.

This portion of the report was adopted.

2. *Report of the Committee on Rural Health.* This committee held no meetings during the year, but through the cooperation of Dr. R. E. Hankins of Mott and Dr. Alice Peterson of Bismarck, it was felt that in at least one county an effort should be made to check whether immunization programs had been successful. This is a commendable program. The Reference Committee hopes that it meets with success. It could be considered on a statewide basis.

This portion of the report was adopted.

Dr. Tudor: Can they go ahead with a program like this unless they get the approval from the House? I can conceive of every committee implementing a program, if this is allowed, that others of us know nothing about. I think they must have the approval of the House of Delegates before they set up a program.

This portion of the report was adopted. The chairman then asked Dr. Tudor if he would like to make a motion regarding this matter.

Dr. Tudor: I believe it must be in our Bylaws that committees are not empowered to go ahead with programs on their own.

Dr. Hall: If we have a motion or ruling such as that, the Committee on Legislation would not be allowed to function, and we could not work in the legislature.

Speaker Christoferson: The Bylaws give the Committee on Legislation certain powers, but I would have to study the Bylaws a little more before I could attempt to answer this question. If you care to move to the effect that we study this matter further, I shall be glad to refer this to our legal department.

Dr. Ordahl: I believe these people are merely sending out a form asking for information. They are an interested group, and this does not have a thing to do with the North Dakota State Medical Association.

Speaker Christoferson: Unless I have a motion, this can not be discussed further.

Dr. Burt: This is merely a program to obtain information as to how many children have been immunized.

3. *The Governor's Health Planning Committee.* This committee had no meeting and there was no report.

An addendum to the Reference Committee report was presented as a matter of information to the House and members.

On April 18, 1962, final negotiations were made with the State Welfare Board, and the following items were discussed:

1. The association agrees to accept payment on MAA accounts based on the OAA schedule, based on the acceptance of the relative value fee schedule proposed elsewhere.

2. Attorneys for the State Medical Association, as well as the Welfare Board, are to negotiate some of the problems as they arise.

3. The Public Welfare Board has agreed to accept the cost-of-living index mechanism, to be revised annually, and the board will initiate this practice in connection with the 1963-65 budget to reflect in the increase in the cost of living since February 1960.

4. Fees for services provided under the Crippled Children program are excluded from this agreement, with the understanding that Crippled Children Services adopt a fee schedule comparable to the public assistance fee schedule, and participating physicians will be given an option to accept this on an individual basis.

5. The MAA program and the OAA program will, for the time being, be considered as one, with identical fee schedules. However, it is understood that if the income limits of the MAA are changed in the future, a separate fee schedule would be developed. For the time being, the fee schedules of both programs will be: medicine, $2.50 per unit; pathology, $4.00 per unit; surgery, $3.00 per unit; X-ray, $5.00 per unit. It is agreed that the Public Welfare Board will accept adjustments or revisions in the relative value fee schedule, as they may be adopted from time to time by members of the North Dakota State Medical Association.

This portion of the report was adopted.

The motion was made by Dr. Burt and seconded by Dr. Lommen that the report as a whole be adopted.

A. C. Burt, M.D., Chairman
M. A. K. Lommen, M.D., Vice-Chairman
R. B. Tudor, M.D.,
N. B. Ordahl, M.D.
W. C. Dailey, M.D.

Report of the Reference Committee on Resolutions

Dr. Ralph Mahowald, chairman of the committee, presented the following resolutions:

RESOLUTION

Whereas, the members of the North Dakota State Medical Association, in conjunction with the South Dakota State Medical Association, attending the seventy-fifth anniversary meeting of this association in Bismarck, have enjoyed the hospitality and kindness of this fair city, and

Whereas, the Mayor of Bismarck and his associates, the press, radio, hotels, and business men have made this session a memorable one,

Now, therefore, be it resolved that the House of Delegates express its appreciation by directing a copy of this resolution to the Honorable Mayor of Bismarck.

This resolution was adopted.

RESOLUTION

Whereas, the exhibitors have shown great effort and interest in this joint meeting of the North and South Dakota state medical associations on the occasion of the North Dakota State Medical Association's seventy-fifth annual meeting, and all former meetings in developing their exhibits and adding to the scientific interest,

Now, therefore, be it resolved that the North Dakota State Medical Association extend to them a hearty welcome and thanks, and

Be it further resolved that a copy of this resolution be sent to each exhibitor.

This resolution was adopted.

RESOLUTION

Whereas, Edwin Boerth, president of the North Dakota State Medical Association for the year 1961-62, has given unstintingly of his time in the service of the North Dakota State Medical Association, and through his untiring interest in national medical legislation, the consistent effort presented by the Welfare Board negotiations, his untiring efforts at many meetings, county meetings, and component medical society meetings,

Now, therefore, be it resolved that the assembled delegates show their appreciation by a rising vote of thanks.

A rising vote of thanks adopted this resolution.

Dr. Boerth expressed his thanks and pointed out that any progress that has been made was due to the efforts of the speaker of the House, chairman of the Council, and the chairmen of the various committees of the State Medical Association.

RESOLUTION

Whereas, the members of the seventy-fifth annual meeting of the North and South Dakota medical associations have thoroughly enjoyed and profited by an excellent scientific program as presented by the joint committee of these two associations,

Now, therefore, be it resolved that the thanks and appreciation of the North Dakota State Medical Association be expressed to this committee, namely, its chairman, and individual members, and

Be it further resolved that each member of this committee be sent a copy of this resolution.

This resolution was adopted.

RESOLUTION

Whereas, the host, the Sixth District Medical Society, with its chairmen and committeemen, have provided excellent niceties and gracious activities of this convention,

Now, therefore, be it resolved that the assembled delegates express their appreciation by a rising vote of thanks.

A rising vote of thanks adopted this resolution.

RESOLUTION

Whereas, the North Dakota State Medical Association is now commemorating the seventy-fifth Year of medical services to the State of North Dakota, and

Whereas, the South Dakota State Medical Association has graciously joined with us in the celebration of this memorable occasion,

Now, therefore, be it resolved that the North Dakota State Medical Association extends greetings and sincere appreciation to the South Dakota State Medical Association for its cooperation and participation in this meeting.

Be it further resolved that a copy of this resolution be directed to the House of Delegates of the South Dakota State Medical Association.

This resolution was adopted.

RESOLUTION

Whereas, the ladies of the Woman's Auxiliary to the North Dakota State Medical Association have, through diligent and continuous effort, raised the sum of $23,598.32 for the Medical Student Loan Fund of the Medical School of the University of North Dakota, and in the past year have raised the sum of $2,746.57, and further have donated $1,130 to the AMEF, and

Whereas, these funds have enabled many medical students to complete their medical training, and

Whereas, the women of the auxiliary have campaigned actively in opposition to the King-Anderson bill (HR 4222), and

Whereas, the members have emphasized health career recruitment this year with members of the auxiliary working devotedly for this objective,

Now, therefore, be it resolved that the House of Delegates of the North Dakota State Medical Association convey to the Woman's Auxiliary their appreciation and thanks for this excellent work, and

Be it further resolved that a copy of this resolution be directed to Mrs. Thomas Longmire and her successor.

This resolution was adopted.

RESOLUTION

Whereas, Dr. Leonard W. Larson, our medical colleague, and member of the North Dakota State Medical Association, has brought the highest of honor and national acclaim to the physician-members of this professional association through his singular achievements within the American Medical Association, and

Whereas, Dr. Larson, as president of the American Medical Association, has arduously and unselfishly exerted every ounce of his physical and mental effort, including great personal sacrifice from the call of his medical practice, in advancing the cause and principles of American medicine, not the least of which has been his unflagging spirit in combating the dangerous legislative proposal of the 86th and 87th congresses, the King-Anderson bill;

Now, therefore, be it resolved that the members of the North Dakota State Medical Association pay unanimous tribute to its friend, leader and colleague, Dr. Leonard W. Larson, for his extraordinary and exemplary contributions, both past and present, to the practice of medicine and the professional organizations to which physicians belong, and

Be it further resolved that a copy of this resolution as printed in the official proceedings of this seventy-fifth annual meeting, be forwarded to Dr. L. W. Larson and the chairman of the Board of Trustees of the American Medical Association.

This resolution was adopted.

RESOLUTION

Whereas, Dr. Willard Wright, the North Dakota delegate to the American Medical Association, and Dr. Tom Pederson, alternate delegate, have worked unselfishly for the medical profession and have brought honor to the North Dakota State Medical Association, and

Whereas, Dr. Willard Wright is presently a member of the Council on Medical Service, and chairman of the Committee on Medical Facilities of the American Medical Association,

Now, therefore, be it resolved that this association pay tribute to these men for their endeavors in behalf of the North Dakota State Medical Association, and

Be it further resolved that a copy of this resolution be forwarded to each of these physicians.

This resolution was adopted.

RESOLUTION

Whereas, provisions were made in behalf of the physicians of North Dakota for representation of the North Dakota State Medical Association to offer testimony before the House Ways and Means Committee of the Congress of the United States, stating their objections to the King-Anderson bill (HR 4222), and

Whereas, this material was more than adequately presented by Dr. Clifford Peters of this association,

Now, therefore, be it resolved that this association present to Dr. Peters a solid vote of thanks for his time and efforts in our behalf and

Be it further resolved that a copy of this resolution be sent to Dr. Peters.

This resolution was adopted.

RESOLUTION

Whereas, the doctors of medicine of the State of North Dakota are deeply appreciative of his time and effort in our behalf, and express the deepest thanks for his zeal and devotion to the profession, and

Whereas, Dr. Edward R. Annis, of Miami, Florida, is an outstanding example of the medical profession,

Now, therefore, be it resolved that the physicians of the North Dakota State Medical Association commend their colleague, Dr. Edward R. Annis, for his zeal in the advancement of the cause of medicine in fighting the King-Anderson bill, and

Be it further resolved that a copy of this resolution be forwarded to Dr. Annis, and also to the members of the Board of Trustees of the American Medical Association.

This resolution was adopted.

RESOLUTION

Whereas, the North Dakota State Medical Association and the American Medical Association have previously adopted and reaffirmed that medical services be provided under the Blue Shield, and hospital service insurance under Blue Cross, and

Whereas, the American Medical Association has established a fixed policy as to radiology, physiatry, pathology, and anesthesiology that these are of the medical services,

Now, therefore, be it resolved that the American Medical Association be urged to make every effort to facilitate the transfer of medical services from Blue Cross to Blue Shield contracts.

This resolution was adopted.

RESOLUTION

Whereas, the North Dakota State Medical Association opposes Section 4 of Senate bill 1552, which vests the authority suggested by this legislation in the Food and Drug Administration, and which would operate to limit research, the marketing of drugs, and the exercise of discretion by the medical profession,

Now, therefore, be it resolved that our congressional delegation in Washington, D. C. be informed of this action, and

Be it further resolved that a copy of this resolution be sent to the president of the North Dakota Pharmaceutical Association.

This resolution was adopted.

RESOLUTION

Whereas, the identifications of Medic-Alert Foundation are a practical and useful method of identifying patients with certain medical conditions, and,

Whereas, your Reference Committee approves the general use of such identification symbols,

Now, therefore, be it resolved that the members of the North Dakota State Medical Association be thoroughly informed and encouraged to use these symbols, and

Be it further resolved that the implementation of this resolution be delegated to the Committee on Emergency Medical Care.

This resolution was adopted.

RESOLUTION

Whereas, there is undeniable need for better mental health service at a community level, and

Whereas, the Committee on Mental Health has moved to support enabling legislation which would provide the formation of mental health units,

Now, therefore, be it resolved that the House of Delegates of the North Dakota State Medical Association give support to such legislation, and

Be it further resolved that this resolution be referred to the Legislation Committee for its consideration and encouragement.

This resolution was not adopted.

RESOLUTION

Whereas, there have been within recent months many statements circulated in the lay press to the effect that the American Medical Association does not represent the majority of practicing physicians in this country in certain of its public stands, and

Whereas, the American Medical Association is by its very structure a representative democratic organization in which physicians at the local level select trusted representatives to vote their opinions in the House of Delegates of the American Medical Association, so that the American Medical Association is in essence the body of the practicing physicians of this country,

Now, therefore, be it resolved that the North Dakota State Medical Association go on record as in full support of the views of the American Medical Association as expressed through its own elected representation, and

Be it further resolved that this association endorses the position of the American Medical Association in support of the Kerr-Mills legislation, and its opposition to the King-Anderson bill and like bills.

This resolution was adopted.

RESOLUTION

Whereas, the physicians of the North Dakota State Medical Association believe that doctors of medicine are best qualified of all people to render opinions on medical care for the people, and

Whereas, we know that the free enterprise system of private medical care, although, not perfect, is the finest system yet devised for producing an optimum of freedom for the patient and a maximum of good work from the physician, both at the lowest possible over-all cost to the citizens of our country, and

Whereas, we are certain that if enacted into law and implemented, the King-Anderson Bill, (HR 4222), will eventually lower the general quality of health care in our nation while increasing tremendously the cost of this care, and

Whereas, the North Dakota State Medical Association has taken active steps to encourage participation by the State of North Dakota in the Kerr-Mills law, has actively worked in Blue Cross and Blue Shield programs to provide insurance coverage for people over 65 years of age, has agreed to accept a lower fee for services to provide care of the medically indigent older citizens, and has encouraged private insurance companies to provide insurance at reasonable cost to the older citizen; and since prepaid medical care for older citizens is now available;

Now, therefore, be it resolved that the members of the North Dakota State Medical Association will actively support and work for all scientific and health progress in medicine and any legislation which would improve the quality of medical care of the citizens of these United States, and

Be it further resolved that because we believe the King-Anderson bill is unwise and detrimental medical legislation, we oppose it since we adhere to the Hippocratic Oath which states that "Medical practitioners will oppose any system of medical care which is detrimental or deleterious to their patients," and

Be it further resolved that each program or plan that proposes to further the progress of health care in our nation will be studied; and after careful deliberation we will work with other authorities in deciding whether or not it would help solve the problem and give the people of our country the finest possible medical care, and

Be it further resolved that this association urges similar action by other state organizations throughout the nation, and directs that copies of this resolution be sent to the President of the United States, the congressional delegation of North Dakota in Washington, D. C., the American Medical Association, and all state medical societies.

This resolution was adopted.

RESOLUTION

The following resolution is for information value only.

Whereas, the Republican Party believes in the basic philosophy of self help rather than welfare dependency, and abhors further federal encroachment upon individual rights and privileges, and

Whereas, the Republican Party believes in the principle of the best medical care possible for the people of North Dakota, regardless of their ability to pay, and

Whereas, it is reasonable to assume that voluntary health insurance, together with present welfare programs and full implementation of the Kerr-Mills act, which provides medical care for persons aged 65 and over who are not otherwise indigent, but unable to meet major medical expenses, will best accomplish this goal, and

Whereas, the proposed King-Anderson bill would take funds from the financially hard-pressed working people under 65 to help pay the cost of medical care for persons over 65 who are well-to-do,

Now, therefore, be it resolved that the Burleigh County Young Republicans go on record commending Dr. Leonard Larson and the American Medical Association for their forthright opposition to the King-Anderson bill.

The resolution was adopted on June 1, 1962.

LeRoy C. Walker, Chairman

No action was necessary on this resolution.

RESOLUTION

Whereas, provisions were made on behalf of the physicians of North Dakota for representatives of the North Dakota State Medical Association to offer testimony before the House Ways and Means Committee of the Congress of the United States, stating this Association's opposition to the enactment of the King bill (HR 4222), and

Whereas, the delivering of such testimony was greatly facilitated through vital briefings and patient guidance given to representatives of this body by dedicated staff members of the American Medical Association, without whose efforts our appearance before said congressional committee would surely have been adversely affected,

Now, therefore, be it resolved, that the North Dakota State Medical Association express its grateful appreciation for services rendered to it, far beyond that which could be expected or anticipated, by personnel comprising the legal and socioeconomic division of the American Medical Association, and particularly Mr. C. Joseph Stetler, its director; and,

Be it further resolved, that all personnel of the Chicago and Washington, D. C. offices of the American Medical Association, who so graciously assisted this association during the congressional hearings on the King bill in July and August 1961, be given our vote of thanks and confidence.

This resolution was adopted.

Dr. Mahowald made the motion that the report as a whole be adopted. Motion seconded by Dr. Nugent and carried.

R. E. Mahowald, M.D., Chairman
M. E. Nugent, M.D., Vice-Chairman
J. F. Houghton, M.D.
J. N. Elsworth, M.D.
Dean Strinden, M.D.

Dr. Jaehning requested that the Committee on Resolutions furnish a resolution commending Dr. Glaspel on his work with the Board of Medical Examiners, and Dr. Seibel asked that a resolution be drafted commending Lyle Limond on his 10 years of faithful service to the association.

The two motions were seconded and carried. The chairman asked that the Committee on Resolutions meet immediately to draft the two resolutions so they could be acted upon before the end of the session.

It was moved by Dr. Tudor and seconded by Dr. Jaehning that the liaison with the dental association, hospital association, voluntary health services, and nurses' association be strengthened so they could share the burden of fighting for free enterprise.

Dr. Peters stated that when he wrote to the directors of these voluntary health associations two years ago he was informed they would take no stand on this.

Dr. Clayburgh noted that the North Dakota State Dental Association had gone on record as opposed to the King-Anderson bill and that letters had been sent to their members encouraging them to oppose this bill. He agreed that better liaison was needed between these sister organizations, and he felt they were doing their best. He added that perhaps they had not been furnished with enough information but would fight right down the line against the King-Anderson bill.

The motion made by Dr. Tudor was passed.

The next item of business was the matter of dues for the ensuing year. The chairman called on Dr. Peters, secretary of the Council.

Dr. Peters: We are not going to ask for an increase, but neither are we going to ask for a decrease. The dues are $100 per year. We feel it is adequate to cover our budget at this time. The budget has been increasing because of this public relations program we have instituted, and because of the battle we are having against the King-Anderson bill. We have had Mr. Buchanan with us now for six months and he is doing an excellent job as public relations man. I feel our dues are being well spent, and our money is being watched carefully and is not being thrown away. No one can put dollar values on TV programs, but the $100 per year is a very small amount to pay. I feel that the chairman should entertain a motion that the $100 be continued.

Dr. Jaehning moved that the dues remain the same. Motion seconded by Dr. Baumgartner and carried.

The chairman announced that the next annual meeting would be held in Dickinson, the Saturday preceding the first Sunday in May, 1963. He said any invitations for a meeting place in May 1964 would be entertained.

Dr. Naegeli: The Fourth District Society wishes to extend an invitation to the North Dakota State Medical Association to hold its annual meeting in Minot in 1964.

Dr. Tudor moved that the 1964 meeting be held at Minot. Motion seconded by Dr. Countryman and carried.

The next order of business was the report of the Nominating Committee. Dr. Sorkness, chairman, yielded the floor to Dr. W. A. Wright.

Dr. Wright: It has been my very great privilege to serve as your delegate to the American Medical Association. During this time I have received from this House and the individual members of the Association a great deal of support. Since I have assumed numerous duties in the American Medical Association, it would seem advisable that I no longer serve as your delegate. With this in mind, a number of years ago a man was elected by the House as an alternate delegate who would, in time, succeed me. This man has attended many meetings of the American Medical Association. He is thoroughly familiar with the AMA. Therefore, I request that I not be considered for re-election as delegate to the American Medical Association.

The Nominating Committee suggested the nominations.

Dr. Sorkness: Dr. Borland, president of the Board of Medical Examiners, requested that Drs. Nierling, Toomey, and Reichert, whose terms expire this year, be reappointed. However, we have the problem that the governor wants more latitude in the choice of names sent to him. We are, therefore, requested to nominate 3 names for each position. These are as follows:

BOARD OF MEDICAL EXAMINERS

R. D. Nierling	Jamestown
J. M. Van der Linde	Jamestown
J. N. Elsworth	Jamestown
G. W. Toomey	Devils Lake
J. C. Fawcett	Devils Lake
O. W. Johnson	Rugby
H. L. Reichert	Dickinson
Keith Foster	Dickinson
A. J. Gumper	Dickinson

It was recommended that the member of the Health Council be reelected.

Dr. Sorkness explained that the terms of 3 members of the Council expire in 1962, and that Dr. Woutat and Dr. Borland had indicated they wished to be relieved of this responsibility. The following nominations were suggested by the committee:

COUNCILLORS

First District	Frank DeCesare, Fargo
Third District	R. E. Mahowald, Grand Forks
Sixth District	C. H. Peters, Bismarck
Councillor-at-large	E. H. Boerth, Bismarck
President	E. J. Larson, Jamestown
President-elect	Amos Gilsdorf, Dickinson
First vice-president	G. A. Dodds, Fargo
Second vice-president	Joe Craven, Williston
Speaker of the House	Lee Christoferson, Fargo
Vice-speaker of the House	C. H. Peters, Bismarck
Secretary	W. M. Buckingham, Bismarck
Treasurer	R. D. Nierling, Jamestown
Delegate to the AMA	Tom Pederson, Jamestown
Alternate delegate, AMA	Robert Painter, Grand Forks

Speaker Christoferson asked if there were any nominations from the floor.

Dr. L. W. Larson: I have no nominations to make from the floor. However, I hope it has been made perfectly clear that if Dr. Pederson and Dr. Painter are elected as delegate and alternate delegate to the AMA they will not assume office until January 1, 1963. You can change that, but I think this is a procedure that is followed in most states. I think it would be a mistake to change the usual procedure, so if you follow this suggestion, Dr. Wright would continue as a delegate for the session in Chicago this month and also at the interim session in late November.

Dr. Jaehning moved that the nominations be closed. Motion seconded by Dr. Countryman and carried and the nominees on the nominating report were unanimously elected.

Dr. Mahowald was called on to present the final resolutions.

Dr. Mahowald: I would like to explain why a resolution was not introduced for Dr. Glaspel. We understood that this had been done at the interim meeting in December. However, this evidently was not taken care of then.

RESOLUTION

Whereas, Dr. C. J. Glaspel has served the North Dakota State Medical Association, as well as the people of North Dakota, through his great devotion to his duties as a member of the North Dakota State Board of Medical Examiners, and

Whereas, Dr. Glaspel has given freely of his time and personal expense to fulfill the office of the secretary of the Board of Medical Examiners in a most commendable manner, and

Whereas, Dr. Glaspel has been recognized as a national authority in the field of medical licensure by the National Association of Medical Board Secretaries,

Now, therefore, be it resolved that the members of the North Dakota State Medical Association make known to Dr. Glaspel our awareness of the trying experiences he has undergone in the fulfillment of his duties, and

Be it further resolved that the House of Delegates of the North Dakota State Medical Association hereby renders a vote of thanks to Dr. Glaspel for his integrity in his position and his devotion to duty, and

Be it further resolved that a copy of this resolution be sent to Dr. Glaspel.

This resolution was adopted.

RESOLUTION

Whereas, the North Dakota State Medical Association has been extremely fortunate to have the outstanding services of its executive secretary, Mr. Lyle Limond, and

Whereas, the North Dakota State Medical Association wishes to show its appreciation for this faithful service for the past ten years in the form of a sincere vote of thanks to Mr. Limond for his devotion to medicine and our problems;

Now, therefore, be it resolved that Mr. Lyle Limond be singularly thanked with the hope he will continue to serve in behalf of the North Dakota State Medical Association, and

Be it further resolved that a copy of this resolution be sent to Mr. Limond.

This resolution was adopted.

There being no further business, the meeting was adjourned at 4:00 P.M.

Scientific Program

Monday, June 4
Bismarck Municipal Auditorium

8:30 to 9:30 A.M.—Registration

8:30 to 9:00 A.M.—Scientific film

9:00 A.M.—C. J. McDonald, M.D., president, South Dakota State Medical Association, moderator, morning program

Greetings: Evan E. Lips, Mayor, City of Bismarck

9:30 to 10:00 A.M.—Address, L. W. Larson, M.D., Bismarck, president, American Medical Association

10:00 to 10:30 A.M.—"Peripheral Vascular Disease," Michael E. DeBakey, M.D., Houston, Texas (Co-sponsored by the North and South Dakota heart associations).

10:30 to 11:00 A.M.—Intermission

11:00 to 11:30 A.M.—"You and Cancer Diagnosis of the Female Genital Tract," Kermit E. Krantz, M.D., Kansas City, Kansas

11:30 to 12:00 noon—"Indications for and Results of Excision of Metastatic Malignant Lesions of the Lung," Alton Ochsner, M.D., New Orleans, Louisiana (Co-sponsored by the North and South Dakota divisions of the American Cancer Society)

12:00 to 2:00 P.M.—NOON RECESS

E. J. Larson, M.D., president-elect, North Dakota State Medical Association, moderator for afternoon program

2:00 to 3:00 P.M.—Panel Discussion on: "Cancer Chemotherapy and Cancer Phobia," L. W. Larson, M.D., Bismarck, chairman; Kermit E. Krantz, M.D., Kansas City, Kansas; and Alton Oschner, M.D., New Orleans, Louisana

3:00 to 3:30 P.M.—Intermission

3:00 to 4:30 P.M.—Panel Discussion on "Thromboembolisms," Oscar Auerbach, M.D., East Orange, N. J., chairman; Michael DeBakey, M.D., Houston, Texas; and James B. Murray, M.D., Fargo

Tuesday, June 5

8:30 to 9:30 A.M.—Registration

8:30 to 9:00 A.M.—Scientific film

9:30 to 10:00 A.M.—Magni Davidson, M.D., President-elect, South Dakota State Medical Association, moderator for morning session

"Some Aspects of Viral Eye Disease," Phillips Thygeson, M.D., San Francisco, California

10:00 to 10:30 A.M.—"Pathologic Changes in Pulmonary Tuberculosis Brought About by Chemotherapy," Oscar Auerbach, M.D., East Orange, N. J. (Co-sponsored by the North and South Dakota Tuberculosis and Health associations)

10:30 to 11:00 A.M.—Intermission

11:00 to 11:30 A.M.—"Our Changing Views of Lupus Erythematosus," Henry E. Michelson, M.D., Minneapolis

11:30 to 12:00 noon—"The Changing Patterns of Infectious Diseases," Chester S. Keefer, M.D., Boston, Massachusetts

12:00 to 2:00 P.M.—NOON RECESS

E. H. Boerth, M.D., President, North Dakota State Medical Association, moderator, afternoon program

2:00 to 2:45 P.M.—"Basal Ganglia Surgery for Parkinsonism, Dystonia, and Multiple Sclerosis: Experience with 2,000 Cases," Stanley Stellar, M.D., New York, N. Y. (Sponsored by the North Dakota chapter, National Multiple Sclerosis Society)

3:00 to 4:00 P.M.—Panel Discussion on "Collagen Diseases," Chester S. Keefer, M.D., Boston, Mass., chairman; Stanley Stellar, M.D., New York, N. Y.; Henry E. Michelson, M.D., Minneapolis, Minn.; and Phillips Thygeson, M.D., San Francisco, Calif.

North Dakota State Medical Association Roster—1962

MEMBERSHIP BY DISTRICTS

First District

Amidon, Blaine F.	Dakota Clinic, Fargo
Armstrong, William B.	Dakota Clinic, Fargo
Bacheller, Stephen C.	Enderlin
Bakke, Hans	Lisbon
Barnard, Donald M.	Fargo Clinic, Fargo
Beithon, Elmer J.	Red River Valley Clinic, Wahpeton
Beithon, Paul J.	Red River Valley Clinic, Wahpeton
Beithon, Richard B.	Fairmount Clinic, Fairmount
Beltz, Melvin E.	Wahpeton Clinic, Wahpeton
Borland, Verl G.	Fargo Clinic, Fargo
Burt, Arthur C.	405 Black Bldg., Fargo
Christoferson, Lee A.	702 - 1st Ave. S., Fargo
Christu, Chris M.	Fargo Clinic, Fargo
Crim, Eleanor M.	1701 - 13th St. S., Fargo
Darner, Charles B.	Fargo Clinic, Fargo
Darrow, Kent E.	Dakota Clinic, Fargo
DeCesare, Francis A.	Dakota Clinic, Fargo

Dillard, James R.	311 Black Bldg., Fargo
Dodds, G. Alfred	Fargo Clinic, Fargo
Donat, T. L.	Dakota Clinic, Fargo
Engstrom, Perry H.	Red River Valley Clinic, Wahpeton
Fercho, Calvin K.	812 Black Bldg., Fargo
Fortney, Arthur C.	Fargo Clinic, Fargo
Foster, George C.	15 Broadway, Fargo
Geib, Marvin J.	702 - 1st Ave. S., Fargo
Geston, Robert L.	402 Sheyenne St., West Fargo
Gillam, John S.	Fargo Clinic, Fargo
Goff, John R.	Fargo Clinic, Fargo
Goltz, Neill F.	Fargo Clinic, Fargo
Gronvold, F. O.	Fargo
Gustafson, Maynard B.	702 - 1st Ave. S., Fargo
Hager, Jerome P.	Hankinson
Hall, G. Howard	Fargo Clinic, Fargo
Hamilton, Thomas M.	Fargo Clinic, Fargo
Haugrud, Earl M.	304 Black Bldg., Fargo
Hawn, Hugh W.	Gate City Bldg., Fargo
Heilman, Charles O.	Fargo Clinic, Fargo
Houghton, James F.	Dakota Clinic, Fargo
Hunter, C. M.	608 Black Bldg., Fargo
Hunter, G. Wilson	Fargo Clinic, Fargo
Irvine, Vincent S.	Lidgerwood
Ivers, George R.	424 De Lendrecie Bldg., Fargo
Ivers, Robert R.	702 - 1st Ave, So.. Fargo
Jaehning, David G.	Hotel Wahpeton, Wahpeton
Kavanaugh, Gerald J.	Dakota Clinic, Fargo
Kelly, William A.	313 Black Bldg., Fargo
Kohlmeyer, Albert C.	702 - 1st Ave. S., Fargo
Kulland, Roy E.	402 Sheyenne St., West Fargo
Lancaster, W. E. G.	Fargo Clinic, Fargo
Landa, Marshall	Dakota Clinic, Fargo
Larson, G. Arthur	812 Black Bldg., Fargo
Lawrence, Donald H.	306 Black Bldg., Fargo
LeBien, Wayne E.	Fargo Clinic, Fargo
LeMar, John D.	Fargo Clinic, Fargo
Lewis, A. K.	Lisbon
Lewis, T. H.	302 Black Bldg., Fargo
Lindsay, Douglas T.	Fargo Clinic, Fargo
Long, William H.	Dakota Clinic, Fargo
Lytle, Francis T.	Fargo Clinic, Fargo
Macaulay, Warren L.	Fargo Clinic, Fargo
Magill, Gordon B.	403 Black Bldg., Fargo
Magness, John L.	Dakota Clinic, Fargo
Mazur, Bernard A.	Dakota Clinic, Fargo
Melton, Frank M.	Dakota Clinic, Fargo
Miller, Herbert H.	509½ Dakota Ave., Wahpeton
Murray, James B.	Dakota Clinic, Fargo
Nagle, Duane W.	Fargo Clinic, Fargo
Nicholson, Richard W.	Fargo Clinic, Fargo
Norum, Henry A.	Fargo Clinic, Fargo
Owens, Walter L.	Dakota Clinic, Fargo
Poindexter, Marlin H., Jr.	Fargo Clinic, Fargo
Poole, Ernest E.	Sasse Bldg., Lidgerwood
Pray, Laurence G.	Fargo Clinic, Fargo
Rogers, Robert G.	Dakota Clinic, Fargo
Schleinitz, Fritz B.	Hankinson
Schneider, Joseph F.	114 Broadway, Fargo
Sedlak, Oliver A.	109 Roberts St., Fargo
Sessums, John V., Jr.	Dakota Clinic, Fargo
Shook, Lester D.	Fargo Clinic, Fargo
Spier, J. J.	1345 N. 5th St., Fargo
Stafne, William A.	Fargo Clinic, Fargo
Story, Robert D.	Fargo Clinic, Fargo
Swanson, Joel C.	407 Black Bldg., Fargo
Thompson, George R.	Fargo Clinic, Fargo
Traynor, Mack V.	Fargo Clinic, Fargo
Triggs, Perry O.	Fargo Clinic, Fargo
Ulmer, Robert J.	Dakota Clinic, Fargo
Veitch, Abner	502 Oak St., Lisbon
Wall, Wendell H.	Wahpeton Clinic, Wahpeton
Wasemiller, E. R.	Wahpeton Clinic, Wahpeton
Webster, William O.	Fargo Clinic, Fargo
Weible, Ralph D.	Dakota Clinic, Fargo
Wenz, E. P.	Dakota Clinic, Fargo
Weyers, Henry J.	608 Black Bldg., Fargo
Williams, N. S.	Dakota Clinic, Fargo
Wiltse, Glenn L.	Wahpeton Clinic, Wahpeton
Wold, Lester E.	Fargo Clinic, Fargo
Zauner, Richard J.	708 Black Bldg., Fargo

Second District

Cook, Stuart J.	Rolette
Corbett, Conner A.	Lake Region Clinic, Devils Lake
Coultrip, Raymond L., Jr.	McVille
Cuadrado, Angel R.	San Haven
Engesather, John A. D.	Lakota
Eyelands, Jon V.	Rugby
Fawcett, John C.	Lake Region Clinic, Devils Lake
Fawcett, Robert M.	Lake Region Clinic, Devils Lake
Fox, William R.	Johnson Clinic, Rugby
Gilchrist, Milton R.	2288 Overlook Dr., Minneapolis 20, Minn.
Gorrie, William A.	Maddock
Hilts, George H.	Cando
Johnson, Christian G.	Johnson Clinic, Rugby
Keller, Emil T.	Johnson Clinic, Rugby
Lazareck, I. L.	411 - 4th Ave., Devils Lake
Longmire, L. T.	411 - 4th Ave., Devils Lake
McBane, Robert D.	Lake Region Clinic, Devils Lake
McDonald, J. A.	Cando
McIntyre, Donald G.	Johnson Clinic, Rugby
Mahoney, James H.	411 - 4th Ave., Devils Lake
Martin, George V.	Michigan Clinic, Michigan
Munro, J. A.	Rolla
Nosal, J. L.	Harvey
Owens, Clarence G.	New Rockford
Palmer, D. W.	Cando
Pine, Louis F.	Lake Region Clinic, Devils Lake
Sawchuk, John	Rolette
Schwinghamer, E. J.	New Rockford
Seibel, Glenn W.	New Rockford
Sihler, William F.	Mann Block, Devils Lake
Terlecki, Jaroslaw	Minnewaukan
Toomey, Glenn W.	Lake Region Clinic, Devils Lake
Towarnicky, Marvin J.	Fessenden
Voglewede, William C.	Carrington

Third District

Benson, T. Q.	1600 University Ave., Grand Forks
Benwell, Harry D.	Valley Medical Associates, Grand Forks
Bowes, H. Angus	1600 University Ave., Grand Forks
Campbell, Duncan W.	Grand Forks Clinic, Grand Forks
Clark, Rodney	Grand Forks Clinic, Grand Forks
Clayburgh, Bennie J.	Grand Forks Clinic, Grand Forks
Countryman, G. L.	1004 Hill Ave., Grafton
Culmer, A. E., Jr.	501 - 1st Natl. Bank Bldg., Grand Forks
Dailey, Walter C.	Valley Medical Associates, Grand Forks
DeLano, Robert H.	Northwood
Doss, R. Douglas	1600 University Ave., Grand Forks

Dzubur, Ione	Northwood
Eaton, L. P.	Grafton Clinic, Grafton
Evans, Harold W.	Grand Forks Clinic, Grand Forks
Flaten, Alfred N.	Edinburg
Frey, Wellde W.	Drayton
Glaspel, Cyril J.	Grafton Clinic, Grafton
Goehl, R. O.	Grand Forks Clinic, Grand Forks
Graham, C. M.	1600 University Ave., Grand Forks
Graham, John H.	15½ S. 3rd St., Grand Forks
Grinnell, Ernest L.	Grand Forks Clinic, Grand Forks
Hardy, Nigel A.	Minto
Harwood, Theodore H.	U.N.D. Medical School, Grand Forks
Haugen, C. O.	Larimore
Haunz, Edgar A.	Grand Forks Clinic, Grand Forks
Helenbolt, Kenneth S.	1600 University Ave., Grand Forks
Helgason, Norman M.	Cavalier
Helm, Richard K.	27½ S. 3rd St., Grand Forks
Hill, Frank A.	Grand Forks Clinic, Grand Forks
Jensen, August F.	1600 University Ave., Grand Forks
Johanson, John F.	Cavalier
Kaluzniak, Nicholas	Langdon
Kana, Dale C.	Grafton Clinic, Grafton
Keig, William P., Jr.	1600 University Ave., Grand Forks
Krahn, Henry	Walhalla
Landry, L. H.	Walhalla
Larson, Eric J.	Cavalier
Leigh, James A.	111 N. 5th St., Grand Forks
Leigh, Ralph E.	111 N. 5th St., Grand Forks
Leigh, Richard H.	1600 University Ave., Grand Forks
Levine, Leonard	Grand Forks Clinic, Grand Forks
Lorentson, Carl E.	Grand Forks Clinic, Grand Forks
McLeod, John	Grand Forks Clinic, Grand Forks
Mahowald, Ralph E.	1400 Grand Ave., Grand Forks
Mann, Hamish	1600 University Ave., Grand Forks
Marshall, Robert A.	27 S. 3rd St., Grand Forks
Meredith, William C.	Drayton
Moore, J. H.	Grand Forks Clinic, Grand Forks
Muus, Jacob M.	McVille
Muus, O. Harold	Commercial Exchange, Grand Forks
Nelson, Wallace W.	Grand Forks Clinic, Grand Forks
Nelson, William C.	Grand Forks Clinic, Grand Forks
O'Toole, James K.	Park River
Painter, Robert C.	Grand Forks Clinic, Grand Forks
Panek, A. F.	Milton
Peake, Francis M.	204 Widlund Bldg., Grand Forks
Penners, John H.	Grand Forks Clinic, Grand Forks
Peterkin, Frank D.	Langdon
Pettit, Samuel L.	Grand Forks Clinic, Grand Forks
Piltingsrud, Harold R.	Park River
Porter, Charles B.	Grand Forks Clinic, Grand Forks
Powers, William T.	Valley Medical Associates, Grand Forks
Prochaska, Leonard J.	517 - 1st Natl. Bank Bldg., Grand Forks
Rand, Charles C.	Grafton
Ruud, John E.	1st Natl. Bank Bldg., Grand Forks
Sandmeyer, John A.	Grand Forks Clinic, Grand Forks
Saiki, A. K.	U.N.D. Medical School, Grand Forks
Sande, C. W.	Larimore
Schafer, Thomas	Grand Forks Clinic, Grand Forks
Silverman, Louis B.	Grand Forks Clinic, Grand Forks
Szyrynski, Victor	U.N.D. Medical School, Grand Forks
Tarpley, Harold I.	Valley Medical Associates, Grand Forks
Teevens, William P.	Grafton Clinic, Grafton
Thorgrimsen, G. G.	1600 University Ave., Grand Forks
Tompkins, C. R.	1004 Hill Ave., Grafton
Vandergon, Keith G.	1400 Grand Ave., Grand Forks
Wasdahl, Walter	U.N.D. Medical School, Grand Forks
Wilson, George A.	Grand Forks Clinic, Grand Forks
Woutat, Philip H.	Grand Forks Clinic, Grand Forks
Woytassek, Leonard E.	Michigan
Youngs, Nelson A.	Grand Forks Clinic, Grand Forks
Yury, Walter E.	1004 Hill Ave., Grafton

Fourth District

Allport, F. W.	Towner
Amstutz, Kenneth N.	Northwest Clinic, Minot
Ayash, John J.	123 - 2nd Ave. S.E., Minot
Bermudez, Enrique	Garrison Clinic, Garrison
Blatherwick, Robert	Parshall
Boyle, John T.	Garrison
Boyum, Lowell E.	Harvey Medical Center, Harvey
Boyum, P. A.	Harvey
Breslich, Paul J.	Northwest Clinic, Minot
Briggs, Brian E.	401 S. Main, Minot
Cameron, Angus L.	Northwest Clinic, Minot
Cameron, A. Malcolm	Northwest Clinic, Minot
Devine, John L., Jr.	Great Plains Clinic, Minot
Dormont, Richard E.	Northwest Clinic, Minot
Erenfeld, Fred R.	617 - 2nd St. N.W., Minot
Fischer, V. J.	Medical Arts Clinic, Minot
Flath, Milford G.	Stanley
Flickinger, Dale B.	Medical Arts Clinic, Minot
Gammell, Robert T.	Kenmare
Garrison, M. W.	Garrison Bldg., Minot
Giltner, Lloyd A.	Medical Arts Clinic, Minot
Goodman, Robert	Powers Lake
Gozum, Ekrem	123 - 2nd Ave. S.E., Minot
Greene, E. E.	Westhope
Halliday, David J., Jr.	Kenmare
Halverson, C. H.	1st Natl. Bank Bldg., Minot
Hammargren, August F.	Harvey Medical Center, Harvey
Hart, George M.	Northwest Clinic, Minot
Heidorn, G. H.	Great Plains Clinic, Minot
Hoopes, Lorman L.	17A S. Main St., Minot
Hordinsky, Bohdan Z.	Drake
Huntley, Wellington B.	Great Plains Clinic, Minot
Hurly, William C.	Medical Arts Clinic, Minot
Jayapathy, B.	123 - 2nd Ave. S.E., Minot
Johnson, O. W.	Johnson Clinic, Rugby
Kaemerle, Harold K.	2318 Teviot, Los Angeles 39, California
Kermott, Louis H., Jr.	401 Main St. S., Minot
Kihle, Kenneth W.	Bottineau
Kohl, D. L.	123 - 2nd Ave. S.E., Minot
Lampert, M. T.	407 - 1st Natl. Bank Bldg., Minot
LaRochelle, William D.	Stanley
Larson, Richard S.	Velva
Leonard, Kenneth O.	Garrison Clinic, Garrison
Leonard, Kermit	Garrison Clinic, Garrison
Loeb, George L.	4435 Beacon Ave. S., Seattle 8, Wash.
London, Carl B.	Northwest Clinic, Minot
McCullough, William F.	Bottineau
McDougall, James R.	214 S. Main St., Minot
Malvey, Kenneth P.	4716 Highland Rd., Hopkins, Minn.
Mari, Justo L.	Bottineau
Miller, C. Robert	1207 Bennett, Bottineau
Naegeli, Frank D.	Northwest Clinic, Minot
Olson, Burton G.	McCannel Clinic, Minot
Richardson, Gale R.	12 - 10th St. S.W., Minot
Rioux, Berchmans	214 S. Main, Minot

Rowe, Paul H.	Northwest Clinic, Minot
Sahl, Jens, Jr.	Northwest Clinic, Minot
Shea, Samuel E.	McCannel Clinic, Minot
Sorenson, Alfred R.	Medical Arts Clinic, Minot
Sorenson, Roger	Medical Arts Clinic, Minot
Sussex, Thomas L.	Great Plains Clinic, Minot
Uthus, O. S.	21½ - 2nd Ave. S.E., Minot
Veenbaas, Fred F.	Northwest Clinic, Minot
Wall, Willard W.	Northwest Clinic, Minot
Wallis, Marianne	St. Joseph's Hospital, Minot
Wilson, Herbert J.	New Town
Wilson, Thomas	Great Plains Clinic, Minot

Fifth District

Christianson, Gunder	117 N.W. 3rd, Valley City
Goven, John W.	117 N.W. 3rd, Valley City
Jensen, Clayton E.	117 N.W. 3rd, Valley City
Jensen, Warren R.	130 Central Ave. S., Valley City
Klein, C. J.	117 N.W. 3rd, Valley City
Macdonald, Alexander C.	130 Central Ave. S., Valley City
Macdonald, Neil A.	130 Central Ave. S., Valley City
Merrett, Joseph P.	117 N.W. 3rd, Valley City
Van Houten, J.	105 Main St. W., Valley City

Sixth District

Amos, James R.	N.D. Health Dept., State Capitol Bldg., Bismarck
Anderson, Freedolph E.	Underwood
Arneson, Charles A.	Cowan Bldg., Bismarck
Baker, Cecil	Cowan Bldg., Bismarck
Baumgartner, Carl J.	Quain & Ramstad Clinic, Bismarck
Berg, H. Milton	Quain & Ramstad Clinic, Bismarck
Berg, Roger M.	Quain & Ramstad Clinic, Bismarck
Bertheau, Herman J.	Linton
Bodenstab, William H.	520 Mandan St., Bismarck
Boerth, Edwin H.	Quain & Ramstad Clinic, Bismarck
Brink, Norvel O.	Quain & Ramstad Clinic, Bismarck
Buckingham, T. W.	405½ Broadway, Bismarck
Buckingham, William M.	Capital City Clinic, Bismarck
Cartwright, John T.	Missouri Valley Clinic, Bismarck
Cleary, Joseph W.	Missouri Valley Clinic, Bismarck
Curiskis, A. A.	Elgin
Dahl, Phillip O.	Missouri Valley Clinic, Bismarck
Daniolos, Demetrios P.	Quain & Ramstad Clinic, Bismarck
Diven, Wilbur L.	402½ Main, Bismarck
Dunnigan, Ralph J.	Capital City Clinic, Bismarck
Eriksen, Johan A.	Quain & Ramstad Clinic, Bismarck
Ewert, Arthur O.	Beulah
Fischer, Hans H.	Quain & Ramstad Clinic, Bismarck
Forsyth, James E.	Cowan Bldg., Bismarck
Fortman, Albert H., Jr.	Capital City Clinic, Bismarck
Frankel, John B.	Quain & Ramstad Clinic, Bismarck
Freise, Paul W.	Quain & Ramstad Clinic, Bismarck
Froeschle, Rudolph P.	Hazen
Gaebe, Otto C.	New Salem
Garrett, W. G.	Missouri Valley Clinic, Bismarck
Girard, Bernard A.	107 - 1st Ave. N.W., Mandan
Goodman, Edward	Napoleon
Goughnour, Myron W.	Capital City Clinic, Bismarck
Gregware, Peter R.	Quain & Ramstad Clinic, Bismarck
Griebenow, Frederick	905 - 9th St., Bismarck
Gutowski, Franz	Wishek
Hamilton, Charles A.	Quain & Ramstad Clinic, Bismarck
Hanson, Harris D.	Quain & Ramstad Clinic, Bismarck
Heffron, Maurice M.	405½ Broadway, Bismarck
Henderson, Robert W.	Capital City Clinic, Bismarck
Hetzler, Arnold E.	322 W. Main, Mandan
Hilts, Joseph A.	104 - 2nd Ave. N.W., Mandan
Icenogle, Grover D.	608 W. Thayer, Bismarck
Jacobson, M. S.	Elgin
Johnson, Kenneth J.	Quain & Ramstad Clinic, Bismarck
Johnson, Marlin J. E.	Quain & Ramstad Clinic, Bismarck
Johnson, Paul L.	Quain & Ramstad Clinic, Bismarck
Kalnins, Arnold	Washburn
Kling, Robert R.	Quain & Ramstad Clinic, Bismarck
Klosterman, Paul F.	Capital City Clinic, Bismarck
Knudsen, Jerry M.	Missouri Valley Clinic, Bismarck
Kuplis, Haralds	Turtle Lake
Larson, Leonard W.	Quain & Ramstad Clinic, Bismarck
Lindelow, Olav V.	Missouri Valley Clinic, Bismarck
Lipp, George R.	405½ Broadway, Bismarck
Lommen, M. A. K.	Capital City Clinic, Bismarck
Montz, Charles R.	Quain & Ramstad Clinic, Bismarck
Moses, James J.	Quain & Ramstad Clinic, Bismarck
Nuessle, Robert F.	Quain & Ramstad Clinic, Bismarck
Nugent, Milton E.	Quain & Ramstad Clinic, Bismarck
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McFadden, R. L.	DePuy-Sorkness Clinic, Jamestown
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Martin, Clarence S.	Medina
Meunier, H. J.	Oakes
Miles, James V., Jr.	119 - 2nd Ave. S.E., Jamestown
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Fennell, William L.	Crosby
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(The transactions will be continued in the February 1963 issue)

Book Reviews . . .

Advances in Rheumatic Fever: 1940-1961

MAY G. WILSON, M.D., *1962. New York: Paul B. Hoeber, Inc. 249 pages. Illustrated. $10.00.*

Dr. Wilson, professor of clinical pediatrics at the Cornell University Medical College, has had unique personal experiences in the life story of rheumatic fever. Her many contributions over the years have made her a recognized authority, and she has had unusual opportunities to follow the victims of this disease. Dr. Wilson has combined all her talents and skills in his volume. The advances in rheumatic fever have been great since 1940, with the institution of a better understanding of the disease and its control through the use of antibiotics and chemotherapeutic agents as well as the establishment of diagnostic criteria.

The book is well written, its illustrations and statistical analyses are adequate, and its format is good. The bibliography is well selected. The practicing physician should benefit from the informative material. The book serves a useful purpose and may be recommended to all who are interested in the diagnosis, treatment, and control of rheumatic fever.

JOHN F. BRIGGS, M.D.
St. Paul

Pharmacology and Patient Care

SOLOMON GARB, M.D., *and* BETTY JEAN CRIM, R.N., *1962. New York City: Springer Publishing Co. 344 pages. Illustrated. Paperback. $4.00.*

This well-printed, but poorly titled, paperback is designed to help nursing students in understanding pharmacology and applying it to good nursing practice. It is organized on the basis of (1) general considerations, (2) pharmacology of drug groups, and (3) the use of drugs in the care of patients. There are well-selected references, excellent tables, and a good index. A similar volume might be useful for the other health professions.

The book is well written and appropriately adapted to pharmacologic information that is important for nurses. A chapter on the responsibility of nursing in relation to drugs is especially pertinent. Another chapter on drug administration is well illustrated. Drug toxicity and addiction are particularly well considered. There is a useful chapter on the nurse's role in the prevention and management of poisoning.

The section on the pharmacology of drug groups is conventionally organized. Unfortunately, there is no discussion of drugs for diagnosis. As in the case of pharmacologic texts, this material might wisely be organized on the basis of the chief uses to which drugs are put: diagnosis, prevention, and cure of diseases; alleviation of the symptoms of diseases; and promotion of optimum health.

The section of the use of drugs in the care of patients could be more systematically organized. It deals specifically with the management of patients with angina pectoris, acute myocardial infarction, congestive heart failure, cardiac arrhythmias, rheumatic fever, bronchial asthma, pneumonia, lung cancer, burns, peptic ulcer, diabetes, gout, osteoarthritis, pyelonephritis, acute barbital poisoning, meningitis, typhoid fever, amebiasis, malaria, and trichinosis. These conditions are usually handled in hospitals and, indeed, the general orientation of the book is toward hospital nursing.

The volume is a useful guide for nurses and should be widely accepted. When it is revised, greater attention to logical organization of material and chapters will enhance its value.

CHAUNCEY D. LEAKE
San Francisco

Surgical Anatomy of the Colon, Rectum and Anal Canal

HARRY E. BACON, M.D., *and* PORFIRIO MAYO RECIO, M.D., *1962. Philadelphia: J. B. Lippincott Co. 152 pages. Illustrated. $12.00.*

The authors have accumulated under one cover most of the pertinent information available concerning the anatomy of this region. In addition, there is a brief review of the physiology. However, basically, new information is not presented. For the average practicing surgeon and, certainly, for the average general practitioner, most of the information conveyed by this book would be redundant. Because of the abundance of minutiae presented in the way of vague, anatomical landmarks and the proper names given to them, this is not an easy reading text. Its chief purpose would seem to be that of a review for anyone needing this particular detailed type of information. Scattered throughout there are isolated references made to a specific treatment; however, these clinical items are a distinctly minor portion of the book and are probably much more adequately covered in other clinical references dealing with this area.

FLETCHER A. MILLER, M.D.
Minneapolis

Essentials of Gynecology

E. STEWART TAYLOR, M.D., *second edition, 1962. Philadelphia: Lea & Febiger. 566 pages. Illustrated. $12.00.*

This new edition of Dr. Taylor's textbook has been rapidly brought up to date. The illustrations and tables are well prepared, clear, and concise. This edition should be most useful to the student and practitioner who deal with gynecologic problems, since the volume does not contain many irrelevant facts. This seems to be a textbook with special emphasis on the practical and everyday aspects of diseases as they relate to gynecology.

The use of the vaginal pool secretions for performance of the Papanicolaou smear seems to be favored by Dr. Taylor. Many gynecologists, however, feel that the actual scraping of the squamocolumnar junction of the cervical portio with the Ayre spatula or its equivalent will yield better results in the detection of the early squamous cell carcinomas of the cervix. It is true that the vaginal pool will be a more representative sample of genital tract; however, the carcinomas of the tube and endometrium are often missed under the best of circumstances. As a cancer detection test, the Ayre spatula technic has gained wide acceptance.

The author seems to place an undue amount of em-

(Continued on page 18A)

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C I B A

(Continued from page 44)

phasis on the value of the endometrial biopsy as a tool in cancer detection. The obtaining of normal tissue in a random biopsy produces a false sense of security, since the malignant tissue may be adjacent to the area biopsied. This technic is invaluable in infertility studies where a representative sample of tissue is required for histologic analysis and proof of ovulation. As a technic in the detection of cancer it does not seem to be of much value.

In the treatment of carcinoma in situ of the vulva, as well as of the uterine cervix, there is still much controversy. It should be mentioned that although the author presents his rationale for simple total hysterectomy or vulvectomy rather well, there is a different approach which also has merit. It may still be too early to evaluate the 2 technics, but until such a time when the superiority of one over the other has been shown conclusively it should be stressed that the alternate treatment by irradiation and radium has much merit. In the same light, the author makes no mention of cervical conization in the accurate diagnosis of carcinoma in situ of the uterine cervix in association with pregnancy.

The author states that emptying the uterus by dilation and curettage is the preferred treatment for a hydatidiform mole. Some feel that expectant waiting is perfectly satisfactory until the patient expels the products of conception. Oxytocin (Pitocin), in the intravenous form, has been used successfully to empty the uterus and hysterotomy has been reserved for those patients in whom less radical means have failed.

Over all, the book has great merit and serves its function well. The minor points raised by the reviewer in no means detract from the value of the volume.

FRED A. LYON, M.D.
Minneapolis

Nightcalls: A Study in General Practice

MAX B. CLYNE, M.D., *1962. Springfield, Illinois: Charles C Thomas. 216 pages. Illustrated. $4.50.*

A team of 8 British general practitioners and 1 psychiatrist agreed to meet at intervals to discuss doctor-patient relationships as experienced in a particular situation: the emergency visit. This volume embodies their findings and conclusions. They discuss, with complete candor, their personal prejudices, their individual failures, their feelings when attending a patient, and their motives in selecting one or another course of action. Much emphasis was placed on the psychologic phenomena in the night call situation.

In a preliminary examination of this book, one might erroneously obtain the impression that this volume consists of many case histories. Instead, Dr. Clyne presents a well-organized discussion divided into 7 sections. The introductory chapter deals with emergency calls and their related problems encountered in Great Britain. Certain contractual obligations, with regard to emergencies, specified under the National Health Service Act, require the practitioner to render to the patient all proper and necessary treatment. Can emergency and, especially, night calls be reduced in number or prevented? What is a "necessary" as opposed to a "frivolous" night call? Questions such as these prompted their study. One is impressed by the discussion groups, which were thorough and often critical of the reporting doctor. Michael Balint of London states in the foreword, "I wonder, whether in the history of medicine, doctors have ever been willing to disclose as frankly as in this book their individual shortcomings, their feelings when attending to their patients and last but not least, their motives for choosing this or that course of action."

The author begins his chapter on patient calls with the term "emergency signal." This is the statement of the person who calls the doctor to express both the patient's and caller's anxieties about the situation; it is intended to arouse sufficient anxieties of the doctor to force him to go to the patient.

A feeling of antagonism toward the emergency calls, especially night calls, is strong among doctors and many find it difficult to cope with such calls. All agreed that emergency calls were burdensome. Examples of the doctor's animosity and hostility to night calls were found in many cases and expressed in such ways: "I went into fury," and "I cursed roundly on the telephone." In a more backhanded manner, no overt anger was shown and in one instance, a doctor forgot "to visit" until reminded by the patient at a later date. They thought that the whole concept of general practice would be destroyed if family doctors were not to attend to their emergency calls.

In the chapter on diagnosis and treatment, it was surprising to note the extreme care taken in their examinations as seen from a psychologic point of view. However, treatment was typical of that probably given by other general practitioners on the midnight call in this country.

This volume concludes with a discussion of the doctor and the patient and a good description of each doctor who participated in this survey.

The evidence shows that each doctor was working under emotional pressures which he did not necessarily recognize at the time but which were recognizable in his contribution. The need of the patient for psychotherapy was probably the outstanding contribution from this group. Since the night call is generally a manifestation of emotional disturbance and anxiety, it offers the opportunity and the challenge to undertake some form of psychotherapy concurrently with treatment of medical symptoms. A study of this volume provides some insights as to how this may best be carried out.

Surely, *Nightcalls* should be read by both the specialist and general practitioner. However, the latter would probably receive more lasting benefits from this book. It will serve as a mirror for the general practitioners; he will be seeing himself at his worst, in mediocre attempts, and at his best.

CARROLL M. LUND, M.D.
Williston, North Dakota

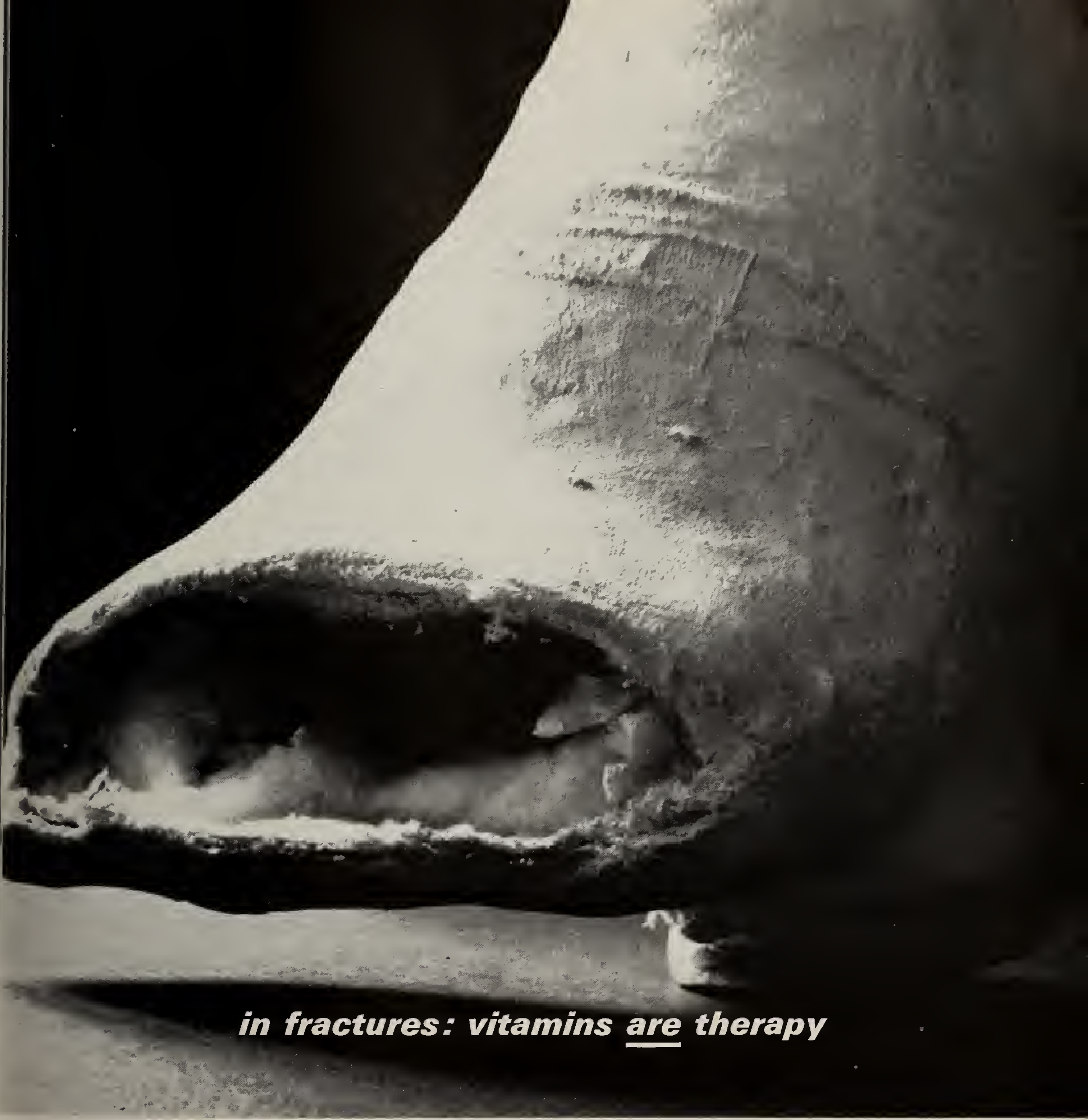
Current Psychiatric Therapies

JULES H. MASSERMAN, M.D., *editor, volume 2, 1962. New York City: Grune & Stratton. 289 pages. $8.75.*

A collection of papers by an impressive list of authors, this volume, together with its companion, volume 1, presents a summary view of all current modes of psychiatric treatment. Volume 2 is concerned with the psychotherapies; in its 289 pages one can find discussions of almost every imaginable facet and problem in this vast area of professional interest.

There are papers on psychotherapy for various ages, from the child to the dying patient; for the gamut of diagnoses from neurotic to psychotic; on psychotherapy in and out of the hospital; and for the criminal and noncriminal. These topics and many others provide a truly

(Continued on page 20A)



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(Continued from page 18A)

rich investigation of the entire field. The quality and readability of the individual papers vary from average to excellent.

When viewed in its entirety, this book represents a courageous attempt to summarize a very complex subject, meeting problems directly, accepting ignorance wherever it exists, yet doing all this with a distinct note of optimism.

For the professional psychotherapist this volume is well worth reading. However, the general physician and others with a more casual interest in psychotherapy would likely find it too detailed and esoteric.

FLOYD K. GARETZ, M.D.
Minneapolis

Psychosomatic Medicine

JOHN H. NODINE, M.D., *and* JOHN H. MOYER, M.D., *editors, 1962. Philadelphia: Lea & Febiger. 1,002 pages. Illustrated. $16.50.*

This compilation of the proceedings of the First Hahnemann Symposium on Psychosomatic Medicine has been edited by Drs. John H. Nodine and John H. Moyer, Department of Medicine, Hahnemann Medical College, San Francisco. It contains the 120 papers presented at the symposium.

The papers are divided by content into 19 sections. The first section examines the problems of psychiatric classification and diagnosis. In the following sections, material from neurophysiology, electroencephalography, psychobiology, biometrics, psychopharmacology, neurology, experimental psychology, psychiatry, psychology, and other allied fields is presented. The contributors within each general area took part in a question and answer period; these discussions were recorded and have been included as chapters.

The prime motive of the symposium was to bring together investigators from the various disciplines which have been making worthwhile contributions to the broad field of psychosomatic medicine. Such a symposium results in an exchange of information which, hopefully, will serve as a platform from which more specific and advanced studies may be launched. For the general practitioner, however, the collection of such diverse papers under one jacket may result only in confusion.

Apparently an attempt was made to cover almost all fields of general psychiatry; consequently, the clinical paper suffered. Time demands reduced many of the clinical papers to mere outlines and broad generalizations.

The outstanding contributions of this book are found in the basic science papers, many of which are excellent. Dr. Joseph Zubin's paper, "A Biometric Approach to Diagnosis and Prognosis," is perhaps the outstanding one. In this chapter, Dr. Zubin outlines a systematic way of developing new tools to improve our knowledge of prognosis and describes methods of improving present-day diagnosis. Dr. Ogden R. Lindsley's paper, "Operant Conditioning Methods in Diagnosis," brings a new investigative method (operant conditioning) to bear on the problems of psychiatric diagnosis and evaluation. Indeed, in order to understand many of the basic science papers, particularly those on psychopharmacology, it is necessary to have a knowledge of operant conditioning terminology and recording technics. Dr. Lindsley describes these technics in clear language and discusses their application to the field of clinical psychiatry.

In summary, this book is too diverse and too long for the general physician or the practicing psychiatrist. The clinical material is better covered in the standard psychiatric texts and journals. However, the student and the scientific investigator may find the volume a valuable source of information for material which would otherwise remain scattered in the various technical journals.

K. H. BLACKER, M.D.
San Francisco

Virgin Wives: A Study of Unconsummated Marriages

LEONARD J. FRIEDMAN, M.D., *1962. Springfield, Ill.: Charles C Thomas. 161 pages. $4.50.*

Every physician has seen the virgin wife. In some instances, explanations for the unconsummated marriage are made, but often the explanation remains concealed or is inappropriate. This monograph includes the work of 10 doctors who, in association with a psychoanalyst, investigated the problem of the virgin wife. Their material consisted of 100 individuals, and the book reviews their experiences, as well as methods of treating this particular problem. This is not an uncommon problem, although it is seldom reviewed or mentioned either in the literature or in manuals devoted to topics such as family planning and marriage hygiene.

There is a brief review of the literature concerning this problem, and the material is presented in the form of a case history and discussion. The material is limited, and the method of presentation lacks definitive help for the reader. Although they list many of the problems, such as frigidity and vaginismus, as being factors in the development of this condition, the emotional and psychic disturbances that are found in this condition are also mentioned and are dealt with in a loose manner. The subject is one worthy of a more detailed analysis, with better exposition of the material and a need for improved methods of therapy.

Although interesting, the volume does not meet the needs of the physician.

JOHN F. BRIGGS, M.D.
St. Paul

Secretory Mechanisms of the Gastro-Intestinal Tract

R. A. GREGORY, D.SC., M.R.C.S., L.R.C.P., *1962. Baltimore: Williams & Wilkins Co. 248 pages. Illustrated. $8.*

The eleventh in a series published by the Physiological Society, this monograph is divided into 3 sections—the stomach, the pancreas, and the small intestine. These sections are then dealt with in a systematic way, beginning with the response to feeding, the influence of the vagus, the antral hormone, gastrin, histamine, pepsin, and, finally, the inhibition of secretion. The author is, of course, exceptionally well-qualified to deal with these subjects. The George Holt professor of physiology at the University of Liverpool, he has made some exceedingly important contributions to our knowledge about the identity and properties of gastrin.

The book is well illustrated, containing a generous number of charts and graphs which add considerably to the clarity and forcefulness of the presentation. There are 3 sections in the back of the book which are particularly helpful; the first is a complete list of references, alphabetically arranged, which in itself makes an excellent bibliography for those interested in the subject. There are then subject and author indexes. The book is,

(Continued on page 22A)

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(Continued from page 20A)

of course, quite up to date, discussing in addition to the most recent information concerning the isolation and properties of gastrin, turnover of intestinal mucosa cells as well as some of the very early studies of Pavlov and Babkin in the light of more recent information. The studies described are concerned mostly with experiments on dogs rather than in man, but the personal experience of the author with regard to these experiments provides insight and illumination which make this monograph quite superior to a simple review of published information. Those interested in gastrointestinal physiology will be delighted with this monograph.

JAMES B. CAREY, M.D.
Minneapolis

Practical Nutrition

ALICE B. PEYTON, B.S., M.S., *second edition, 1962. Philadelphia: J. B. Lippincott Co., 434 pages. Illustrated. Paperback, $3.00.*

The first edition of this book was written for the practical nurse. In the preface of the second edition, the author states that she hopes it will serve as an authoritative source of information for both the homemaker and individual who wishes to improve his food habits and promote better health.

The book has several sections: normal nutrition, diet therapy, food economics, and an appendix which includes questions for discussion. The first 9 chapters deal primarily with the nutrients. This area is oversimplified, not well written, and, in some cases, misleading. For example, the author discounts the effect of dietary cholesterol on serum cholesterol. The section on the nutrient flourine is inadequate. The statement regarding the effectiveness of fluoridation of public water supply is most inadequate. "While the effectiveness of this program is still being studied, results suggest that the younger children (1-8 years) have fewer dental caries." There has seldom been a public health measure that has had so much investigation on its effectiveness and safety. Since dental caries is one of the most prevalent diseases in the world and this one measure, fluoridation of public water supply, is effective far beyond 8 years of age, this paragraph is misleading.

The section on the effect of exercise on weight control is old-fashioned. Publishing charts which were prepared about twenty years ago, showing that one must walk 5.3 miles to lose the calories gained by eating a piece of cake, is not good teaching. Moderate exercise does not stimulate the appetite to cause excessive eating. Regular, moderate exercise in addition to caloric control is one of the effective ways to conducting a successful weight control program.

There is considerable information on low and moderate cost meal planning, along with suggestions on food purchasing. It does not, however, sufficiently emphasize patterns for different nationality groups. There are some interesting, practical comments on food fads as well as infant and child feeding.

The first objective of the book, the teaching of the practical nurse, might be met if some of the nutritional information were modified. Parts of the book may be useful to such persons. The second objective—to serve as an authoritative source of information to the homemaker or individual who wishes to improve his nutrition—will not be met. The nutritional section leaves much to be desired. The book does not read very well.

FREDERICK J. STARE, M.D.
Boston

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DR. JAMES J. KIDNEY, a native of Goodrich, has begun practice in Beach. Dr. Kidney is a graduate of Jefferson Medical College of Philadelphia.

* * * *

DR. GERALD R. SWAFFORD, a native of Bismarck, has joined the DePuy-Sorkness Clinic in Jamestown. Dr. Swafford received his medical degree from Vanderbilt University School of Medicine, Nashville, Tennessee.

* * * *

DR. L. G. PRAY of Fargo is the new president of the North Dakota Mental Health Association. He succeeds Robert H. Lundberg of Bismarck.

* * * *

DR. JAMES F. MADISON has joined the department of dermatology of the Fargo Clinic. Dr. Madison received his medical degree from Temple University School of Medicine, Philadelphia.

* * * *

DR. RUDOLPH FROESCHLE has left the Hazen Clinic for a residency in anesthesiology at the University of Wisconsin Medical School, Madison. Dr. Froeschle plans to return to North Dakota after completing his residency.

DR. SYLVIA F. STERNLIEB has been appointed assistant clinical director of the Outpatient Clinic at the State Hospital, Jamestown. Dr. Sternlieb has been clinical director at the Northeastern Mental Health Center, Aberdeen, South Dakota.

* * * *

DR. ROBERT H. DELANO of Northwood is the new president of the North Dakota chapter of the American Academy of General Practice. He succeeds Dr. Ralph Mahowald of Grand Forks. Other officers are Dr. Edmund Vinje of Hazen, president-elect; Dr. Robert Hankins of Mott, vice-president; and Dr. John Swenson of Jamestown, secretary-treasurer.

* * * *

DR. LLOYD S. RALSTON has joined the department of internal medicine of the Quain and Ramstad Clinic in Bismarck. Dr. Ralston, a native of Crystal, previously practiced in Aberdeen, South Dakota, and Grand Forks.

* * * *

DR. DONALD E. CASSELS, professor of pediatrics at the School of Medicine, University of Chicago, delivered the annual Darrow-Long lecture at the First District Medical Society meeting October 30, in Fargo. The lectureship is sponsored by the Dakota Medical Foundation. Dr. Cassels, a native of Ellendale, received his medical

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degree from the Harvard Medical School, Boston. He is a specialist in pediatric cardiology.

Minnesota

DR. THOMAS A. STOLEE is the new assistant medical director for the North Central home office of Prudential Insurance Company in Minneapolis. Dr. Stolee is a graduate of the University of Minnesota Medical School.

* * * *

DR. WALTER A. FANSLER, emeritus professor of surgery at the University of Minnesota, was a guest speaker at the annual meeting of the Montana Medical Association in Missoula, Montana. He presented two papers: "Proctoscopy—A Neglected Diagnostic Procedure" and "Abscesses and Fistulae."

* * * *

DR. DAVID W. FLORENCE has joined the staff of the St. Louis Park Medical Center as orthopedic surgeon. Dr. Florence has been in military service and on the staff of the Crippled Children's Clinic at Tucson, Arizona, for the past two years.

* * * *

DR. RICHARD HENRY has taken up the practice of the late Dr. R. D. Nichols and Dr. E. E. Ulrich at Crosby. Dr. Henry received his medical education at the University of Minnesota Medical School. Dr. Ulrich is now resident physician in psychiatry at the University of Oklahoma School of Medicine, Oklahoma City.

* * * *

THE CENTER FOR CONTINUATION STUDY, University of Minnesota, Minneapolis, will present the following medical continuation courses in January, February, March, and April: Introduction to Electrocardiography, January 7 through 11; Proctology, January 7 through 11; Internal Medicine, February 4 through 8; Neurology, February 11 through 16; Neurosurgery, March 1 and 2; Trauma, March 15 and 16; Otolaryngology, April 15 through 17; Obstetrics, April 25 through 27; and Ophthalmology, April 29 through May 1. Details may be obtained from the Director, Department of Continuation Medical Education, 1342 Mayo Memorial Building, University of Minnesota, Minneapolis 14.

* * * *

DR. KENNETH W. TEICH of Duluth is treasurer-elect of the Academy of Psychosomatic Medicine, to be installed at the annual meeting in San Francisco in October. Dr. Teich is chairman of the Duluth Chamber of Commerce's public health committee.

(Continued on page 26A)

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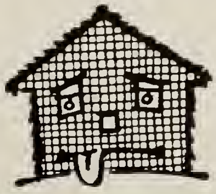

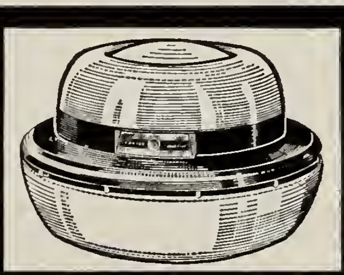

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NEWS BRIEFS

(Continued from page 25A)

ALL RESIDENTS OF THE TWIN CITIES AREA are participating in a poliomyelitis immunization program utilizing Sabin oral vaccine. The 3 types of vaccine are being given to infants and older persons alike despite a warning from the U. S. Public Health Service that type 3 may have caused polio in some adults. The Poliomyelitis Advisory Committee to the State Board of Health decided that the PHS caution was based more on suspicion than pathogenic evidence. Dr. Gaylord W. Anderson, director of the School of Public Health at the University of Minnesota, said investigation so far has shown the vaccine incites only a harmless infection in the gastrointestinal tract.

The county medical societies of Hennepin, Ramsey, Dakota, Anoka, Wright, and Washington are sponsoring the immunization program with the assistance of state and local health departments. Type 1 oral vaccine was given October 6 and 7, type 2 is to be given November 10 and 11, and type 3 probably will be given in January.

* * * *

DR. OWEN C. BOLSTAD of Little Falls has begun a four-year graduate residency training program at the Veterans Administration Hospital in Minneapolis. Dr. Bolstad resigned as medical director of District Eight of the State Health Department and discontinued his medical practice in Little Falls.

* * * *

DR. CARRIE E. CHAPMAN, fellow in physical medicine and rehabilitation in the University of Minnesota Mayo Foundation, Rochester, from 1946 to 1949, has received the bronze medal of the American Congress of Physical Medicine and Rehabilitation. Dr. Chapman received the award for her thirteen-year study, "Atraumatic Hydrotherapeutic Debridement of Severely Burned Patients." Now chief of physical medicine and rehabilitation at Veterans Administration Hospital, Oakland, California, Dr. Chapman will serve as president of the American Institute of Ultrasonics in Medicine for 1962-63.

* * * *

DR. RICHARD A. DE WALL, co-inventor of the DeWall-Lillehei artificial lung, has left the University of Minnesota Medical School to become chairman of the Department of Surgery at the Chicago Medical School. Dr. DeWall also is chief of surgery at Mount Sinai Hospital, Chicago.

* * * *

THE MAYO FOUNDATION honored 24 fellows and former fellows at a convocation in Rochester on May 25. Dr. Charles M. Wilhelmj, Jr., of Omaha, Nebraska, fellow in dermatology, received the award of the Alumni Association for meritorious research. Dr. Robert W. Olson of Winter Park (Orlando), Florida, fellow in radiology, was given the Carman Fellowship in Roentgenology for outstanding ability promising continued future development and usefulness. Dr. Paul E. Hermans of Utrecht, Netherlands, an assistant to the staff in medicine, received the Judson Daland Travel Award for special achievement. Dr. Robert Kim of Honolulu, Hawaii, first assistant in dermatology, was presented with the Paul A. O'Leary Award for research in dermatology. Dr. Wilbur F. Britt, Jr., of Morrilton, Arkansas, fellow in neurologic surgery, received the Winchell McK. Craig Award for outstanding performance in neurosurgery. Dr. Ronald L. Linscheid of Hutchinson, Kansas, assistant to the staff of the Mayo Clinic in orthopedic surgery, was presented the Ralph K. Ghormley Award for special achievement in orthopedic surgery. Dr. Stephen

W. Carveth, of Lincoln, Nebraska, first assistant in surgery, was given the Howard K. Gray Travel Award for special achievement in surgery. Dr. Rudolf A Pyka, of Kattowitz, Germany, former fellow in orthopedic surgery in the Mayo Foundation, received the Henry W. Meyerding Award for outstanding research in orthopedics. Dr. Ara V. Doumanian of Beirut, Lebanon, fellow in surgery, was given the E. Starr Judd Award for an outstanding surgical research thesis. Dr. Alan L. Gordon of Chicago, assistant to the staff in medicine, was recipient of the A. Ashley Rousuch Award for excellence as a fellow in internal medicine. Dr. Kent W. Barber, Jr., of Quincy, Illinois, first assistant in surgery, was the winner of the J. William White Award for work done by a fellow in surgery. Dr. Heinz W. Wahner of Loehne, Germany, fellow in medicine, received the J. Arnold Bargen Award for excellent research in gastroenterology. Dr. John W. Heaton, Jr., of Baldwin, Kansas, fellow in medicine, was recipient of the Postgraduate Travel Award for high achievement in internal medicine. Drs. P. Kent Cullen, Jr., of Indianapolis, assistant to the staff of the Mayo Clinic in general surgery; Harley C. Carlson, consultant in the section of diagnostic roentgenology, Mayo Clinic; David R. Sanderson of South Bend, Indiana, fellow in medicine; and Jack L. Titus, a member of the section of pathologic anatomy of the Mayo Clinic, each received an award from the Edward John Noble Foundation for display and development of leadership. Drs. Melvin A. Amundsen of Oak Park, Illinois, fellow in medicine; Bruce A. Kottke, consultant in medicine in the Mayo Clinic; Richard H. Mattson of Minneapolis, fellow in neurology; William R. Metge of State Center, Iowa, fellow in medicine; Kai Rehder of Hohenwestedt, Germany, former fellow in anesthesiology; Allen L. Schwandt of Los Angeles, former first assistant in allergy; and Walter M. Teller of Essen, Germany, former fellow in pediatrics, each received the H. V. Jones Award for superior ability in medical science.

* * * *

DR. JAMES T. PRIESTLEY, head of a Section of Surgery and chairman of the Board of Governors of Mayo Clinic, Rochester, was elected chairman of the Board of Regents of the American College of Surgeons at the annual clinical congress in Atlantic City, New Jersey. Dr. Priestley has been a fellow of the college since 1933.

* * * *

DR. HARVEY BERGNER has joined the Oliver Clinic in Graceville. Dr. Bergner is a graduate of the University of Manitoba Faculty of Medicine, Winnipeg, and completed his internship at St. Boniface General Hospital, St. Boniface, Manitoba.

* * * *

DR. VINCENT RYDING has resumed his practice in Mountain Lake. Dr. Ryding had been studying under a fellowship in physical medicine and rehabilitation at the Colorado University Hospital.

* * * *

DR. HARRY SIMMONDS has closed his practice in Prior Lake. Dr. Simmonds plans to specialize in anesthesiology in New York for two years before returning to Prior Lake.

* * * *

DR. ROGER T. COLLINS has been elected chief of staff of the new Roseau Area Hospital. Dr. Collins was a member of the medical staff of Roseau Community Hospital, now renamed.

(Continued on page 28A)

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(Continued from page 27A)

South Dakota

DR. WINSTON B. ODLAND, a native of Groton, has joined the staff of the Huron Clinic. Dr. Odland is a graduate of the University of Pittsburgh School of Medicine and completed his residency in otolaryngology at the U. S. Naval Hospital, Philadelphia.

Deaths . . .

DR. N. ELLIS MATTOX, 81, physician in Deadwood and Lead, South Dakota, for forty-five years, died November 2 in Belle Fourche. Dr. Mattox received his medical degree from the University of Louisville School of Medicine in 1912.

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DR. FRANK NORRIS KNAPP, 71, an eye specialist, died November 9 in Duluth, Minnesota. Dr. Knapp received his medical degree from Bowdoin Medical School, Brunswick-Portland, Maine, in 1917.

° ° ° °

DR. JOHN P. BARTLE, 55, a native of Barnesville, Minnesota, died November 3 in St. Paul. Dr. Bartle received his medical degree from the University of Manitoba Faculty of Medicine, Winnipeg.

° ° ° °

DR. GEORGE C. H. ERNEST, 81, retired South St. Paul physician, died October 18 in Lakeland, Florida. Dr. Ernest received his medical degree from the University of Kansas School of Medicine, Lawrence-Kansas City, in 1906.

° ° ° °

DR. RICHARD W. P. ACHOR, consultant in medicine in the Mayo Clinic, Rochester, Minnesota, and assistant professor of medicine in the Mayo Foundation, died November 26 in Rochester. Dr. Achor was a specialist in diseases of the heart. He received his medical degree from the University of Oregon Medical School, Portland.

° ° ° °

DR. WINSLOW C. CHAMBERS, 85, physician in Blue Earth, Minnesota, for fifty-four years, died November 8 in Blue Earth. Dr. Chambers was a past president of the Blue Earth Valley Medical Society and a former vice-president of the Minnesota Tuberculosis and Health Association. He became a member of the Minnesota State Medical Association's Fifty Year Club in 1956. Dr. Chambers received his medical degree from the University of Minnesota Medical School, Minneapolis, in 1905.

° ° ° °

DR. RUSSELL O. SPITTLER, 54, former New Richland, Minnesota, physician, died November 11 at his home in Lodi, California. Dr. Spittler received his M.D. degree from the University of Minnesota Medical School, Minneapolis, in 1933.

° ° ° °

DR. HOWARD S. COWLEY, 48, former fellow in neurosurgery at the Mayo Foundation, Rochester, Minnesota, died November 9 in Mobile, Alabama. Dr. Cowley was in the practice of neurosurgery in Mobile. He was a graduate of Creighton University School of Medicine, Omaha, Nebraska.

COMING *in* March

Articles and features to be found in the next issue of The Journal-Lancet

Allergic diseases form one of the largest groups of chronic disorders. According to Drs. Ekrem Gozum and John J. Ayash of the Minot Eye, Ear, Nose, and Throat Clinic, Minot, North Dakota, who write on the allergic problems of the upper respiratory system in the March issue of The Journal-Lancet, approximately 10 per cent of the population of the United States is subject to some form of allergy; and allergy of the upper respiratory tract is the most common type of allergic disorders.

Gozum and Ayash present a brief review of allergy of the upper respiratory system and its medical and surgical treatment. The authors stress that complications of the allergic reactions should not be overlooked when treating the allergy. When bronchial asthma is present, the paranasal sinus pathology should be investigated in cases of resistance to treatment. Allergy should be considered first in children with middle ear complications.

Repeated audiometric studies should be done for evaluation of therapy. A complete adenoidectomy with myringotomy is always necessary in patients not responding to the antiallergic management.

Among other articles of interest to be found in the March issue are:

- **The Individuality of Children: The Physician's Role,** by John A. Anderson, Minneapolis
- **Stroke Volume Nomogram,** by Victor W. Bolie, Ames, Iowa; John E. Gustafson, Des Moines, Iowa; and Harold Margulies, Indianapolis
- **Carcinoma of the Prostate,** by George T. Mellinger, Minneapolis
- **Tuberculosis Detection at Harvard University,** by Orrin Levin, Cambridge, Massachusetts

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Series on UROLOGY *for the* PRACTITIONER

The Female Urethra

GEORGE L. GARSKE, M.D.

Minneapolis

A COMMON complaint in women of any age is that of "bladder trouble." However, this so-called "bladder trouble," in most instances, has its primary source in the urethra, manifesting itself either as an acute or a chronic type of urethritis or as one of the other entities peculiar to the female urethra. The annoying and aggravating symptoms and occasionally extensive disability produced by disease of the female urethra are usually in sharp contrast to the degree of pathology found on examination, particularly in chronic urethritis. Urethral disease in women and girls is often overlooked or disregarded because of persistently normal findings in the urine. When examining the patient and the urine without a urethroscopy, the clinician's findings are, in many instances, so minimal that the disorders are unjustly diagnosed as functional. Lesions of the urethra should always be considered as a source of abdominal pain or discomfort in women. The urethra is partially or fully responsible for 75 per cent of urinary disturbances in women.

ANATOMY

The antomical structure and location of the urethra are the 2 basic reasons why this segment of the urinary tract is so frequently involved. The female urethra is a short, muscular tube 2.5 to 4 cm. in length and 8 mm. in diameter, increasing slightly in the proximal third. In the normal individual, it will accommodate a 28 F. sound with ease. The normal lumen is not rigid, nor does it stand open; it is only potential. A cross sectional view of the urethral lumen shows an inner epithelial layer and an outer smooth muscular layer with an inner longitudinal and an outer circular coat. The connective tissue layer between the epithelial and muscular layers contains the vascular and lymphatic structures. The anterior and posterior portions are divided by an ill-defined, but extremely powerful, sphincteric mechanism within the urogenital diaphragm. The distal two-thirds of the urethra is lined with squamous epithelium and is continuous with the introitus. The proximal third of the urethral lumen is lined with tran-

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GEORGE L. GARSKE *is an instructor in urology, University of Minnesota, and consultant in urology, Veterans Administration Hospital, Minneapolis.*

sitional cell epithelium and is continuous with the epithelium of the urinary bladder. The canal, in the relaxed state, presents a pleated appearance formed by longitudinal ridges of mucosa.

The urethra is 10 to 12 mm. in thickness and its inner lumen circumference is studied with numerous paraurethral glands. Just within the meatus are the Skene's glands lying within the muscular coat, with ducts opening generally in the distal third of the urethra and occasionally at the external urethral meatus. Paraurethral glands are usually not found in the proximal third of the urethra. Glands have been described within the urethra that resemble the prostate microscopically. These have usually been found in the posterior lateral walls of the urethra and occasionally surround the entire urethral lumen. The glands have been regarded as homologs of the prostate of the male, but this has been limited by some investigators to mean only those glands located in the posterior half of the urethra. The glands may occasionally undergo hyperplasia, giving rise to the so-called "female prostate," and many have been found to contain concretions. Lymphatic drainage of the female urethra is to the deep inguinal, external iliac, and hypogastric nodes and is similar in arrangement to the lymphatics found in the posterior urethra of the male. Arterial supply is from branches of the inferior vesical and internal pudendal arteries with the veins draining to the pudendal and vaginal plexes. An especially rich nerve supply is present from the hypogastric sympathetic plexus and the sacropudendal plexes. The sole function of the urethra is the conveyance of urine from the urinary bladder to the outside. The female urethra, in its entirety, corresponds to the posterior urethra of the male. The structure, innervation, and blood supply of the urethral wall and the adaptability to the function of micturition are practically identical in the two sexes. The female urethra is in close proximity to the organs of the generative tract and is extremely susceptible to trauma and inflammation from continual bathing by secretions arising from the vaginal mucosa and the uterine cervix. The urethral meatus is poorly protected from generative tract secretions and contamination of the rectum, for it is practically wide open, or extremely patulous, and lacking protection from the labia. The female urethra, from the diaper stage of life to old age, offers easy access to organisms present in the region to gain entrance to the bladder and then to the upper urinary tracts.

CLASSIFICATION

Many different methods have been used to classify the following diseases of the female urethra: acute and chronic inflammations, stricture of the urethra, urethral caruncles, prolapse of the urethra, urethral diverticulum, urethrocele, foreign body of the urethra, urethral injury, congenital diseases of the urethra, venereal diseases, and carcinoma of the urethra. This probably is the most complete classification, but it can be condensed to anomalies, infections, tumors, and injuries, as with other organs.

Urethritis, in general, may be classified according to the following age groups: (1) Urethritis in infancy and childhood is based on anomalies of the urethra, specific or nonspecific vaginitis, soiled diapers, and poor perineal hygiene. (2) Urethritis in the child-bearing period is most common and accounts for a large number of the patients seen by the urologist. Ascending urethritis, occurring just before, during, or shortly after the menstrual period, is seen frequently because of the change in the vascular supply of the pelvis at this time, with less resistance to infection, as well as the continual bathing of the urethral meatus in the menstrual flow, which affords an excellent culture media for any organisms present. The trauma and secretions of pregnancy, labor, and delivery definitely play a part in producing a urethritis. The patient with so-called "honeymoon cystitis" undoubtedly has symptoms from the trauma which occurs during intercourse followed by a secondary infection. In addition, there is lymphatic communication between the cervix and base of the urinary bladder offering a further route for entrance of infection to this area. Urethritis occurring in the postpartum period and postoperative phase of hospitalization often results from trauma by catheterization or by placement of an indwelling catheter, with trauma to a latent urethral focus of infection or direct introduction of infection. (3) The menopausal woman, with the usual changes of epithelium in the generative organs and other organs of the pelvis, is particular susceptible to urethritis. (4) A postmenopausal patient, with senile vaginitis and poor tissue resistance, is also a potential candidate for urethral disease. Acute and chronic urethritis at any age may be associated with cystitis, trigonitis, and, occasionally, upper urinary tract infection or an extraurinary infection.

DIAGNOSIS

The usual office work-up for the patient with symptoms of disease of the female urethra should begin with an adequate history, not only of the urinary system but of the general systems as well. In addition to pain in the suprapubic region, lower back, lower abdominal quadrants, and thighs, the urethra may be suspected as a source of other common symptoms: frequency, urgency, dysuria, incontinence, straining, discharge, voiding with effort, and sensation of incomplete emptying. In both sexes, one would immediately look to the urethra as the source of trouble. According to Folsom and Alexander, "Any pain within two feet of the female urethra, which does not seem to be adequately accounted for by some definite pathology, should be suspected of being due to the urethra."

Physical examination should not be limited to the urethral area. Examination of the urethra through the anterior vaginal wall should be done whenever a vaginal examination is carried out and not just in suspected urethral disease. The normal urethra feels much like a semirigid tube, 1 cm. in diameter, along the central portion of the anterior vaginal wall, originating at the base of the bladder outlet and terminating in a vertical slitlike meatus 5 mm. in diameter about 2 cm. below the clitoris and above the external vagina. One may be impressed that the normal urethra is thickened until some experience is gained.

Particular attention should be given to the external urethral meatus. When the examining finger strips the length of the urethra, one should search for and note secretions at the meatus. Occasionally one may see the orifices of dilated ducts at the external urethral meatus from the glands of Skene which may show an egress of purulent material upon expression of the urethra. A microscopic study of the secretion, including Gram and methylene blue stains, and culture of the material with sensitivity studies should be done. Vaginal examination by speculum and digit, with microscopic and cultural studies of the vaginal secretions, is mandatory. Rectal and bimanual examinations should be included. A catheterized urine specimen should be obtained with a well-lubricated catheter, and this too should be subjected to complete study. Measurement of the residual urine should be made and the specimen should be thoroughly appraised. An excretory urographic series may show chronic changes from asymptomatic ascent to kidney or ureter from previous lower urinary tract disease, but most often it will be normal. Anomalous kidneys and ureters, particularly with duplication, may indicate, or lead one to suspect, emptying of one of the anomalous ureters into the urethra itself. Suspicion of this abnormality should be high in the incontinent female child. The most important phase in the study of the female urethra is urethroscopy with a cystoscopic examination as well. Much can be accomplished without it, but eventually it must be done. The urethroscope reveals a positive diagnosis, for in many cases the microscopic examination of the urinary sediment is negative.

ACUTE INFLAMMATION OF THE URETHRA

The etiology may be one or several sources. Acute Neisserian infection was formerly a common source; however, in this section of the country, the incidence of venereal disease is very low. Trauma from a catheter, douche tip, or intercourse may produce an acute inflammatory reaction. Chemical inflammation, secondary to instillation of various medications, must be considered. Dietary indiscretions with large amounts of caffeine, alcoholic beverages, condiments, tomatoes, and certain fruits may produce an acute reaction. The mucosal surfaces of the urethra are not unlike other organs which manifest themselves as shock organs to certain allergenic substances. Postinstrumentation inflammation of the urethra is common, particularly in the postpartum or postoperative periods, when the patient has been catheterized for an acute urinary retention. The exploring, investigative, erotic man or woman may place a bobby pin, glass rod, or other foreign material in the urethra. Interstitial inflammatory reaction of the urethra may occur in the patient with a latent focus of infection in a paraurethral gland which may come out of a dormant state spontaneously. The genital origin of acute inflammation, as seen from the trauma of intercourse or the secretions of the generative tract containing bacteria, or both, or from the flagellate Trichomonas vaginalis, is most common. Poor personal hygiene and improper cleansing maneuvers after bowel movements or micturition easily produce an acute infection.

Symptoms are those of vesical irritability with obvious frequency, dysuria, nocturia, urgency, and sensation of relief, usually after voiding. Symptoms are not constant in all patients, and the course may be from one to several days with relief at varying intervals. It must be remembered that "pain from the urethra may be distributed to any area within two feet of the urethra itself." Many of these patients are extremely nervous and some suffer more from the nervousness than from the vesical neck irritability itself. The nervous reaction is usually related to the severity of the symptoms. The findings on vaginal examination may reveal a tender, slightly thickened urethra, with tenderness at the urethrovesical juncture. If the disease is due to a Neisserian, or a Trichomonas infection, these organisms will be found on study of the urethral or vaginal secretion and, sometimes, in the urine. The urine itself may be completely negative, and, at the time of urethroscopic study, a generalized hyperemia and edema of the mucosa of the urethral lumen will be found.

Treatment is simple, and, if the etiology is specific, medication for the organisms found on the culture and sensitivity study can be used, together with forcing fluids, hot sitz baths, warm saline douches, a bland diet with no caffeine or alcoholic beverages, and no sexual activity. If the etiology of acute inflammation of the urethra is from some source other than infection, eradication of the factor, together with this regimen, will usually suffice. Treatment should be too long rather than too short, in order to avoid recurrence. Cervicovaginal foci must be eliminated and perineal cleanliness stressed.

CHRONIC INFLAMMATION OF THE URETHRA

Chronic inflammation of the female urethra is usually seen in middle life and may have an obscure cause, but usually there is history of a previous acute episode. This kind of urethritis is the source of most annoying and, occasionally, totally disabling symptoms. The etiologic factors producing the acute episode are those just mentioned which are not completely eradicated, with subsequent tissue changes in the urethra producing the chronic phase. It is frequently due to secondary changes from a specific or nonspecific chronic cervicitis or vaginitis. Mucosal changes of hyperplasia of a granular or "cobblestone" appearance are seen, together with fibrosis of the mucosa and submucosa. The paraurethral glands are infected. The hyperplasia of the mucosa may be so extreme that the lumen will be almost completely occluded. The symptoms and treatment are essentially the same as in the acute stage. In addition, to eliminate the granular hyperplasia and to stretch the fibrosed urethra and establish drainage from the paraurethral ducts and glands, the patient will benefit by a weekly series of gentle urethral dilations, massage of the urethra over an inlying sound, and instillation of 0.125 per cent silver nitrate or 0.6 per cent nitrofurazone (Furacin) with the use of nitrofurazone urethral suppositories (containing 2 per cent diperodon hydrochloride, an anesthetic agent). Application of 10 per cent silver nitrate under vision through a urethroscope may be necessary or, in the stubborn case, electrofulguration may be required. Cervicovaginal foci must be eliminated and perineal cleanliness stressed.

STRICTURE OF THE FEMALE URETHRA

Stricture of the female urethra may be either congenital or acquired. Congenital strictures of the female urethra, contrary to the general impression, are quite common and are found at the external urethral meatus consisting of a circular band of resistant tissue, probably originating from fetal remnants of the cloacal membrane. The stricture may be traumatic in origin or a sequela of chronic urethritis with periurethral fibrosis and contracture of the urethra. Obstruction may be only partial, but it may occasionally be almost complete and represent a definite etiologic factor in many infections of the female urinary tract because of poor drainage of the urinary output. A collection of residual urine with subsequent bladder damage follows. Symptoms are those of an acute urethritis, accompanied by straining during micturition with a sensation of incomplete emptying in the long-established stricture. Treatment is meatotomy and follow-up serial dilations to prevent recurrence, together with the regimen for acute and chronic phases of urethritis.

URETHRAL POLYPS

Urethral polyps, pedunculated, or the sessile "tab-like" polyps are very common in the female with long-standing chronic urethritis. They may form in any part of the canal but are especially frequent in the proximal third of the urethra and at the bladder neck. They vary in size from a thin, villous thread with a central vascular supply to a diameter of 4 to 5 mm. Some have multiple villous fronds resembling a papilloma. A polyp may reach such size that it may extrude from the external urethral meatus. A history of long-standing cystitis and urethritis is usually noted. The symptoms are those of vesical neck irritability, and occasionally the patient may note a sensation of continual pressure in the area of the urethra as well as a feeling of incomplete voiding. Pyuria and microscopic hematuria are fairly frequent, but in many instances a completely negative urinalysis will be found. The diagnosis is made by urethroscopic study. Treatment of the patient with urethral polyps is the same as the regimen for chronic urethritis, with specific medication for the organisms found on culture and sensitivity studies. In many patients, light fulguration or transurethral resection of the polyps may be required, with follow-up urethral dilation and instillation. In the menopausal and postmenopausal patient, the use of estrogenic vaginal cream has proved to be of benefit, particularly in the prevention of recurrence.

URETHRAL CARUNCLE

A urethral caruncle is a friable, sensitive, vascular tumor, usually seen in the middle-aged or elderly woman. The tumor is usually on a pedicle, moves freely, and bleeds easily when touched. Caruncles are large or small, the small caruncles being extremely common and usually seen daily in the practice of the general practitioner and gynecologist. It is the best known and least understood lesion of the female urethra. The etiology is obscure, but it is probably a hyperplastic response to infection and frequently is associated with chronic cystitis, granular urethritis, and chronic cervicovaginitis. It is commonly seen with chronic Trichomonas vaginitis. The true caruncle is a vascular, raspberrylike tumor, 1 to 10 mm. in diameter or larger, found at the posterior lip of the urethral meatus. It is not a true neoplasm nor is it a precancerous lesion. However, these lesions may coexist and every caruncle should be examined histologically to exclude the possibility of carcinoma. A typical caruncle is most often of angiomatous character and without glandular elements.

The patient may have no complaints, or symptoms may vary from slight pain during micturition and coition to severe pain during urination with frequency and occasional bleeding usually noted on the postvoiding tissue. Diagnosis is made on inspection and confirmed by histologic examination of the removed tissue. Treatment is removal of the caruncle by sharp dissection or with a loop electrode, with follow-up serial dilations of the urethra and the use of estrogen vaginal suppositories or estrogen cream. As in all urethral disease, cervicovaginal foci must be eliminated and perineal hygiene stressed.

PROLAPSE OF THE URETHRA

Prolapse of the female urethral mucosa may be partial or involve the complete circumference of the external urethral meatus. It is characterized by an eversion or rolling out of the urethral mucosa through the external urethral meatus, forming a rosette of tissue at the external meatus. Size of the mass depends on the extent of the prolapse, and, not infrequently, one sees minor phases of redundancy with only partial protrusion as the first stage of development of extensive prolapse. In many instances of limited eversion or redundancy with proliferative change, the lesion may be mistaken for a caruncle. The mass may be red, pulpy, and so large that the external urethral meatus may be completely obliterated, and it may be impossible to catheterize the bladder. Prolapse may follow removal of a caruncle but, usually, relaxation of the meatus in the aged or an unknown factor is the cause. The frequent occurrence in children suggests a weakness of the adherent structure of the urethral mucosa to the connective tissue layer, permitting downward and outward extrusion with the propulsive force of each voiding. Urethral prolapse in children should not be confused with a prolapsed ureterocele. Complaint of a painful, protruding mass, bleeding and producing difficult urination and occasionally acute urinary retention, may be described. The diagnosis is made on inspection and, finally, by examination of the tissue removed microscopically. There are several different methods of treatment, but the most successful is circular excision, or circumcision, of the prolapsed mass, followed by serial dilations. Cauterization has been successful in many instances; the stellate coagulation method uses deep radial strokes in the various quadrants of the protruding mass.

DIVERTICULUM OF THE FEMALE URETHRA

Diverticulum of the female urethra has become a more common urologic disorder only because of increased awareness of the condition. Physicians who search for diverticula will find them, but they are not common. Urethral diverticula may be confused with lesions of Skene's glands or paraurethral cyst or abscess, and a differential should be made. The origin is not clear, but perhaps a minute herniation occurs through the mucosa of the urethral lumen at a point weakened by trauma or by rupture into the urethral canal by a paraurethral abscess or a retention cyst. This progresses in size with the constant force exerted by the urinary stream. Diverticula have been found in fetuses, infants, and young virgins with no history of urinary infection. These may be congenital diverticula, secondary to occlusion of a paraurethral duct, with the accompanying gland continually capable of secretion, or they may be from faulty union of primitive urethral folds or from Wolffian duct remnants. Diverticula more commonly result from injury to the urethral mucosa due to mechanical trauma, cystoscopy, the passage of calculi, or prolonged infection. Diverticula usually become infected and form chronic indurated abscess masses which, in turn, produce urethral and vesical infection. Many have been found containing calculi and some have become completely cut off from the urethral lumen, forming a cystic structure.

The patient usually complains of frequency,

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burning, dysuria, dyspareunia, occasional gross hematuria, and, occasionally, hesitation in the urinary stream. One patient voided easily and felt she emptied her bladder, but she could always express a few cubic centimeters of urine, usually cloudy, upon placement of a finger in the vagina and massaging the anterior vaginal wall. The diagnosis is made by finding a midline pouch in the middle third of the urethrovaginal wall which presents as a fluctuant mass. The examiner can express pus and urine on stripping the urethra, followed by disappearance of the mass. Confirmatory evidence is obtained by urethroscopy, and, in some instances, the orifice can be visualized and catheterized. A urethrogram may be made with a double-bulbed catheter, with one bulb in the bladder and the other flush up against the external urethral meatus, and visualizing the diverticulum with injected radiopaque media. The treatment for permanent cure requires excision. However, small diverticula have become asymptomatic and disappeared by massage of the urethra over an indwelling urethral sound, coupled with chemo- and antibiotic therapy, sitz baths, cleansing douches, and abstinence from sexual activity.

URETHROCELE

Urethrocele is usually termed a wide-mouthed diverticulum or pouch that communicates widely with the urethra, whereas true diverticula usually communicate with the urethra by a narrow or tubular opening. Urethrocele is usually the result of trauma associated with pregnancy and delivery and is accompanied by generalized relaxation of the pelvic floor with formation of a cystocele and rectocele. The symptoms are those of stress incontinence unless the area of the urethrocele has become infected, and the symptoms of vesical irritability are also present. The diagnosis is made by vaginal examination with the finding of a pouchlike deformity of the anterior vaginal wall in the region of the posterior half of the urethra. This is further confirmed by urethroscopic study at which time the wide-mouthed pouch is visualized. It may present itself as a true pouch or merely as a relaxed floor of the urethra in the region of the pouch formation. Treatment is repair of the cystocele and rectocele with resection of the pouch, if large; otherwise, the use of the so-called "Kelly stitch," with plication of the urethra and vesical neck, may prove to be the only form of surgical treatment necessary.

INJURIES

Injuries of the female urethra, apart from those acquired at childbirth, are extremely rare because of the location of this structure beneath the pubic arch. Straddle injuries and rupture or puncture of the urethra by fragments of fractured pelvic bones are occasionally reported but are infrequent in comparison with the incidence found in the male. The canal is short and straight; instrumental injury is unusual. The urethra may be injured during coition, and surgical injuries with formation of fistulae are occasionally seen. Insertion of foreign bodies may produce mucosal tears or a complete penetration of the wall of the urethra. The accidents of labor, with extreme and prolonged pressure, may produce contusions or tears in the muscle fibers and mucosa. During delivery the urethra itself may be torn and occasionally completely avulsed with the use of obstetrical forceps. Treatment of severe injury to the urethra must first be attended by diversion of the urinary stream by a suprapubic cystostomy. Usually the contusion or tears of the mucosa will heal with placement of a splinting, indwelling catheter for several days, plus generous use of chemo- and antibiotic therapy. Follow-up urethral dilations are essential.

VENEREAL DISEASE

Gonorrhea in the female is predominantly a gynecologic problem. However, the urethra is frequently involved, either primarily or, most often, secondarily from the genital tract. The disease is transmitted by sexual intercourse but, especially in female children, may be contracted by contact with infected fingers, linen, and other articles. In adult women the cervix is most frequently the site of the primary infection, the urethra is next, and Bartholin and Skene's glands follow. The urethra is usually infected secondarily from the bacteria in the vaginal discharge. The entire urethra as well as the trigone are likely to be involved, and a gonorrheal-type cystitis does occur. Chronic infections these days are relatively uncommon because of the effective use of antibiotics and other chemotherapy. In female children, Neisserian urethritis and cervicitis are infrequent and the infection is usually confined to the vagina and vulva.

Symptoms of urethrovesical gonorrhea are those of vesical irritability, with urethral discharge and, occasionally, hematuria. In children, the initial complaints usually are of itching and burning about the genitals from a purulent discharge. The labia are usually swollen and may be stuck together by the discharge which is formed. Diagnosis is made by the microscopic study of urethral and vaginal smears of the dis-

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charge after suitable staining. Treatment with massive doses of penicillin and sulfonamides controls the infection, and follow-up urethral dilation will prevent the complication of urethral stricture. A Wassermann test should be done as soon as the diagnosis is made and before penicillin is used. The patient must be cautioned that frequent serologic tests for syphilis should be carried out for several months following the original infection to be certain that a primary lesion has not been masked by the use of the antibiotic. In children, vaginal suppositories containing estrogenic substance are advised in addition to chemo- and antibiotic therapy.

Chancre of the female urethra is of less frequent occurrence than in the male urethra, and it is most likely found at the meatus or in the anterior portion of the vaginal canal. Gummatous ulcers of the vulva may undermine and destroy the urethra, but these are practically unheard of today.

TRICHOMONAS URETHRITIS

Trichomonas vaginalis is a common offender today and may be classified by some as a venereal disease. Minute red dots are seen around the external urethral meatus and in the vestibule in the early stage, but most often a chronic, odoriferous white discharge appears from the urethra. Urethral infection from this organism originates from cervicovaginal foci which originally came from the rectum, and a cycle of reinfection by the male partner is to be expected.

The chief symptoms are of local itching and burning and a profuse, frothy vaginal and urethral discharge. Palpation of the urethra reveals tenderness and thickening, and the patient complains of severe urgency, frequency, and burning on urination. The cystoscopic picture is not pathognomonic; however, with invasion of the urinary bladder, the mucosa has a fluffy, granular appearance and may show bullous edema. The so-called "strawberry" trigone, in which the mucosa has a rough appearance, with many small, circumscribed hemorrhages, may be seen. Flagellates are easily detected when present, and a definite diagnosis can be made only after the organism is seen. Treatment of the cervicovaginal foci is directed toward changing the pH of the vaginal secretions to the acid side and using the many flagellacides which are now available. Follow-up care with urethra dilation and instillation is required for the secondary proliferative formation of heavy granulation tissue of the involved urethra. Bladder involvement responds to irrigations with achroflavin, silver nitrate, benzyldimethylammonium chloride (Urolocide), or tetracycline (Achromycin). The male partner must always be suspected of harboring the flagellate and examined with this in mind.

VERRUCA ACUMINATA

Verucca acuminata has been reported involving the urethra. The so-called "venereal wart" is transmitted by sexual intercourse but may be acquired without such contact. Symptoms may be nonexistent other than for the presence of a palpable deformity in the region of the external urethral meatus. These are treated by excision or, probably best, by fulguration rather than podophyllin.

URETHROVAGINAL FISTULA

Urethrovaginal fistula is rare. Widespread destruction of the entire base of the bladder, and consequently the urethra, due to obstetrical injury, irradiation sequelae, or malignant disease, occurs infrequently. These fistulae are extremely difficult to close in the latter 2 instances and are probably best treated by some type of diversion of the urinary stream. Urethrovaginal fistula may follow excision of urethral diverticulum; however these fistulae, if small, may close spontaneously, providing diversion of the urine by indwelling urethral catheter is carried out. Rupture of an abscess of a paraurethral duct or gland into the urethra and vagina or incision of a suburethral abscess may produce a fistulous tract.

ANOMALIES

Absence of the female urethra has been reported, usually in conjunction with other marked congenital anomalies such as extrophy of the bladder. Partial formation of the urethral walls with atresia has been observed. A few cases of partial or complete duplication of the urethra are on record. These bifurcated canals must be distinguished from fistulous tracts. Congenital urethral valves probably occur rarely.

Anomalous ureteral orifices in the urethra are sometimes seen. This anomaly causes incontinence in women much more often than in men, for the anomalous orifices are likely to be within the sphincteric mechanism of the man. This anomaly should be suspected in the incontinent woman.

Hypospadias in the woman is common and is in no sense similar to hypospadias in the male. Ordinarily the urethra opens in the vestibule halfway between the clitoris and the anterior vaginal wall, but when it opens into the edge or directly into the vagina, as in hypospadias, it is more susceptible to ascending infection. Persistent cloaca is extremely rare.

RARE DISEASES

Infection of the female urethra by tubercle bacilli is extremely rare.

Urethral calculi are usually secondary.

Benign papillomas are occasionally encountered and they usually are found just within the meatus. Adenomas of the female urethra are uncommon and appear as painless nodules within the urethral meatus. Benign tumors originating in connective and muscular tissue are rare. The papillomas, adenomas, and benign tumors usually cause symptoms of obstruction and are best removed with electrocautery. All urethral lesions should be microscopically examined.

Primary carcinoma of the female urethra is rare but becoming more common because of the awareness that in some cases, a "caruncle" is not a caruncle, as suspected, but is actually a true carcinoma. It is usually found at the junction between the transitional epithelium and stratified squamous epithelium. Squamous-cell type is the most common, but adenocarcinoma originating from glandular structures is observed. Sarcoma is very rare; however, of all the urinary tract organs, the urethra is the most frequently involved by melanoma. The treatment for carcinomas, sarcomas, and melanomas is disappointing, with radical excision of the urethra and bladder and diversion of the urine by ureterosigmoidostomy or ileal segment transplant providing some measure of comfort before death. The high degree of malignancy of these tumors, the late stages at which they are first seen, and the age of the patient all contribute to a poor prognosis.

Secondary carcinoma of the urethra is not unusual and many malignancies of bladder, cervix, vagina, vulva, and uterus may involve the urethra. These are incurable, miserable lesions and may best be treated by palliative measures directed at comfort for the patient by urinary diversion.

SUMMARY

1. The urethra is partly or completely responsible for a large percentage of urinary disturbances in women.

2. Urethral disease in women and girls is often overlooked or neglected, particularly when the disease process fails to reflect positive urine findings.

3. Symptoms of urethral disease are generally of greater magnitude than the extent of disease found.

4. The most common lesions of the urethra are reviewed. In some, the diagnosis may be made by inspection, palpation, or both. In others, urethrocystoscopic study is required for positive diagnosis.

5. A general treatment outline for these diseases is given.

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Preliminary Studies of an Acute Coronary Care Area

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An area specially designed, equipped, and staffed to provide immediate treatment at the onset of cardiac arrest can be a vital part of every hospital's program of cardiac resuscitation.

This is our conclusion from a study of two-month results in an intensive care-intensive coronary care area at Bethany Hospital, Kansas City, financed by a research grant from the John Hartford Foundation.

A preliminary report was made earlier[1] on a cardiac resuscitation program called Code Blue Emergency, which had been started a year before with Foundation funds. The second grant provided the intensive care unit where patients with acute cardiac conditions could be treated during the early stages of their critical illness.

PURPOSE

A 2-phase program is under way in the unit. Using ward-type facilities, we are studying the impact of electronic equipment upon the care of patients and upon patterns of nursing service. Using private rooms, we are studying patients by constant monitoring with automatic scope pacemakers during the ten to twelve days of their critical illness. This program will continue for two years. Early studies, experiences, and problems during its first two months may be helpful to other hospitals contemplating establishment of such a unit.

AREA PLAN

The area was designed to be a self-contained nursing unit, complete with equipment, drugs, apparatus, and supplies. It consists of a ward with 7 beds, 4 private rooms, a large reception room for immediate relatives, a smaller one for hospital chaplain or physician, and a centrally located nursing station. When needed, at least 2 beds, along with scope pacemakers, can be made available from the general intensive care area.

In the intensive care unit, patients are maintained on body-functioning units which measure and record temperature, pulse, respiration, and systolic and diastolic blood pressure.

A crash cart is available at all times. In addition to the equipment described in the earlier report,[1] this particular cart carries a direct current (D.C.) defibrillator.

The rooms in the intensive coronary care area have the most modern equipment, including electric beds. Patients are under constant monitoring with automatic built-in Electrodyne scope pacemakers during the immediate ten to twelve days of their critical illness. Each scope pacemaker is modified by a remote-control method so that its alarm will not sound in the patient's room but will be recorded audibly and visually on a central alarm unit at the nursing station. Each patient unit has its individual oxygen supply and suction equipment. A unique electronic call system allows the nurse at the bedside to intercept the general hospital speaker system with a Code Blue Emergency announcement.

This area also maintains a Beck-Rand apparatus for external cardiac massage and a D.C. cardioverter.

REACTION OF PATIENTS

We had thought that patients might be alarmed at being admitted to the intensive coronary area and that we might have to spend considerable time allaying their fears and explaining the electronic equipment. There was no such problem, however. Only 1 patient was moved out upon advice of the project director. This 77-year-old woman never had been in a hospital before. She was afraid to be alone in a room and was afraid of having electrodes attached to her chest.

We had planned originally to monitor the patients in private rooms for approximately ten days and then move them to other parts of the medical floors. However, a high percentage of them asked to remain. This allowed us to moni-

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tor them constantly for fourteen to twenty-one days.

The charge for a private room was maintained at $30 a day. The Kansas City Blue Cross Association was most cooperative.

PROBLEMS

We had 3 major problems: (1) relatives and visitors, (2) electrodes, and (3) false alarms.

We thought we had provided for relatives and visitors through a large reception room planned and developed by an interior decorator, but we were wrong. Eventually, we had to limit visitors for each patient to 2 members of his immediate family. This caused complications when the patient had several children. We required other visitors to use hospital lobbies.

Attachment of electrodes to a patient's chest constituted a problem. We experimented with colloidal silver paste and found it impractical. We tried using collodion around the electrodes, with reapplication every twenty-four hours, but this irritated the chest. We returned to the conventional method of using salt paste and having the electrodes changed every two to three hours.

The machine was disconnected from the patient and his chest washed thoroughly with soap and water and then dried. A suitable skin lotion was applied; occasionally, alcohol was used. The chest then was powdered and the salt paste applied. By using this technic and changing the electrodes over various intercostal spaces, we were able to maintain constant monitoring for as long as twenty-one days without serious skin irritation. Proper care of the chest is important.

Our third problem, which arose early in the program, was the large number of false alarms. A pacemaker would be triggered when an electrode came loose as a patient moved unexpectedly from side to side or turned on his abdomen. When this happened, the patient sustained an electric charge to his chest. We prevented this by leaving the pacemaker and the alarm in the ON position and turning off the voltage.

This technic can be used only in an intensive coronary care area where nursing personnel can get to a room quickly. Our nurses can reach a room within twenty seconds.

We found that certain types of chests are more prone than others to slippage of electrodes. False triggering of alarms was frequent in patients who sustained an anterior wall infarct and in others in whom the R wave decreased across the vector positions. This was corrected partially by increasing the current and the amplitude of the R wave by the machine or by changing the position of the electrodes to pick up different leads.

ROLE OF NURSES

The greatest impact in an acute coronary care area comes from its constant nursing attention. A patient learns quickly that electronic equipment will bring help immediately if he has a problem. Intensive nursing supervision, plus a well-trained nursing unit, ensures the patient of special service. The graduate nurse has been returned to the patient's bedside.

EARLY RESULTS

During our first two months of operation, 17

EARLY CASES—ACUTE CORONARY CARE AREA

Case	*Sex*	*Age*	*Infarction*	*Arrest*	*Results*	*Comments*	*Hours monitored*
1	M	69	Anterior	Yes	Deceased	Admitted in shock. One previous infarct	21
2	M	40	Posterior		Alive	No complications. Moved to medical floor after three days	72
3	F	76	Anterior	Yes	Deceased	Maintained on shock therapy. No response	77
4	F	61	Posterior		Alive	Old infarct two years previously. No complications	72
5	F	75	Anterior		Alive	Moved out of area after one day. Disliked private room and equipment	24
6	M	67	Anterior	Yes	Deceased	Two previous infarcts. Admitted, and remained, in shock	18
7	M	51	Posterior		Alive	Severe posterior infarct with A-V block	336
8	F	64	Anterior	Yes	Alive	Admitted in ventricular tachycardia. Standstill responded to pacemaker	330
9	M	84	Anterior		Alive	Developed second-stage A-V block	108
10	M	61	Posterior		Alive	Shock. On intravenous Levophed	504
11	F	71	Anterior	Yes	Deceased	In shock and diabetic acidosis. Beck-Rand apparatus used	20
12	M	61	Anterior		Alive	No complications	250
13	M	74	Anterior		Alive	Heart failure developed	408
14	F	77	Anterior		Alive	Left bundle branch block. Shock and heart failure developed	384
15	F	65	Posterior	Yes	Deceased	Admitted in shock and diabetic acidosis. A-V block	62
16	M	35	Posterior		Alive	No complications	148
17	M	57	Posterior		Alive	No complications except premature atrial beats. Antazoline used	388+

patients with myocardial infarction were treated. Monitoring hours totaled 3,258. Ten patients were admitted with anterior wall infarction and 7 with posterior wall infarction. Five who were admitted with massive infarction accompanied by severe shock died. This had been expected, and no major resuscitation was attempted. Death was by the route of ventricular standstill, and in no instance did an automatic pacemaker start the heart.

Some staff internists referred only those patients they considered to be in critical condition. This led to a slightly higher mortality rate than the over-all pattern in the hospital. Since the area proved to be helpful in caring for the cardiac patient and best results in resuscitation occurred in the younger age group and in patients who appeared to be doing well, we feel that all cardiac patients should be referred.

VENTRICULAR STANDSTILL

Before the opening of the intensive care cardiac department, 80 per cent of cardiac patients on general floors of the hospital died in ventricular standstill. To date, under constant monitoring, all deaths in our area occurred in this manner.

Patients who succumb to arrest with ventricular standstill present an almost hopeless medical problem. Their myocardial infarction generally is associated with shock and the development of heart failure. We treated one such patient with the Beck-Rand apparatus and were able to maintain a good carotid pulse. However, hypotension was present, and the ventricular standstill could not be reversed.

A 64-year-old woman was admitted with a ventricular tachycardia associated with an anterior wall infarct and shock. She was given 1-arterenol (Levophed), and deslanoside (Cedilanid) was introduced intravenously. There was conversion to sino-atrial rhythm approximately twenty-five minutes after digitalis was given. This was followed by ventricular standstill, with activation of the automatic pacemaker while the attending physician was at her bedside. Sino-atrial rhythm returned in approximately forty-five seconds. The patient was kept in the area for fourteen days, with three hundred thirty hours of monitoring. She was discharged later from the medical floor, well. In this instance, the automatic pacemaker proved to be of significant value.

VENTRICULAR FIBRILLATION

Ventricular fibrillation in the cardiac patient is a great challenge and satisfactory results can be obtained. Continuing studies in the intensive coronary area include D.C. defibrillation and the D.C. cardioverter. Burning of the chest wall, with obvious myocardial change, occurs when frequent A.C. shock is used. The D.C. defibrillator can be used at 5,000 volts, with markedly decreased amperage and can be given at approximately .0025 second. Therefore, it would seem that the heating of myocardial cells will be less intense and that burning can be avoided through its use.

A 54-year-old woman was admitted after a fainting episode. Within twenty hours she entered ventricular fibrillation 18 times. Each development was recorded on a Sanborn cardiette attached by cable to the pacemaker. On 6 occasions she spontaneously converted to sino-atrial rhythm, each episode lasting about forty seconds. Despite intensive therapy, she gradually entered into more prolonged periods of ventricular fibrillation. Three times she was shocked back to sino-atrial rhythm by alternating current. She died after a thirty-eight-minute attack from which she could not be restored.

SUMMARY

This is a report on early studies and problems in the development of an acute coronary care area at Bethany Hospital, Kansas City, Kansas. Major problems encountered were the regulation of relatives and visitors, care of the patient's chest, and false and unnecessary triggering of the pacemaker. Early experiences proved that development of such an area is practical and that it is an ideal method for caring for the acute cardiac patient during the early stages of his critical illness. D.C. defibrillation appears to be superior to A.C. current in abolishing ventricular fibrillation and converting to sino-auricular rhythm.

ADDENDUM

During the first five months of operation we have treated 32 cases of myocardial infarction with total monitoring hours of 8,567. Unexpected cardiac arrest has occurred 7 times. Five of the arrests responded to the external automatic pacemaker and 2 to external massage. All patients are alive and well.

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Mastoiditis in Children

A Review of 77 Cases

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MASTOID infections in children are not a thing of the past, but, instead, a common complication of ear and throat infection.

Not only has the incidence of major complications increased proportionately, but their recognition has become more difficult. This may be the result of widespread use of antibiotics and chemotherapy, without adequate follow-up.

Poulin[1] has noted a number of bizarre cases of otitis media and mastoiditis which he attributes to inadequate antibiotic treatment. In 2 children, the middle ears had apparently cleared, yet there was mastoid pathology with swelling. Today physicians are treating ear infections because they feel that surgical mastoids have become a rarity and they assume that all cases of otitis media will respond to some type of antibiotic.

Goldman and Rosenwasser[2] reported 2 cases of ear infections. The patients entered the hospital *in extremis* after prolonged antibiotic therapy which had concealed the clinical picture until too late.

In the past fifteen years the number of mastoid operations has decreased greatly, probably because most otolaryngologists and many pediatricians and practitioners feel that all cases of otitis media can be treated and cured with antibiotics. Even such a basic procedure as myringotomy and aspiration of the middle ear has been considered unnecessary in some quarters and is done infrequently by pediatricians and practitioners, who see most of the acute ear infections.[3]

It is clear that complications of mastoiditis still occur, and they may appear without any stormy symptoms when antibiotics have been used continuously during the earlier stages of the disease.

It has been my experience that advanced mastoid disease can exist without the symptoms and signs which, two decades ago, were considered necessary to make the diagnosis of suppurative mastoiditis.

Evans[4] has reported on 30 cases in which mastoiditis had developed without pain, fever, or elevated white cell counts. All these patients had been treated with insufficient doses of antibiotic drugs and none had had the benefit of myringotomy.

Goodale and Montgomery[5] have further stated that many physicians have (1) a mistaken idea that mastoiditis has disappeared from the medical picture—that an attack of otitis media carries with it no dangers and requires only a short course of antibiotic treatment to reduce the temperature and pain—and (2) the conception that this is a medical disease—that there is no need for myringotomy and that there is no possibility of surgical complications provided antibiotics are given in large doses.

MATERIAL

The cases I would like to present are those seen in my own practice of pediatrics during the last five years. At the present time, I have a 5-year-old boy in the hospital being treated medically for a bilateral otitis media and mastoiditis while we are waiting for decision from the otologist concerning mastoidectomy.

Since 1955 I have hospitalized 77 children for treatment of mastoiditis. Their ages range from 5 months to 14 years; the sexes are about evenly divided.

The presenting symptoms in mastoiditis are usually those of earache, intermittent fever, and general malaise, with an occasional draining ear and headache (table 1). As many of the children were below the age of 5 years, audiometric analysis was difficult, but a few of the older children presented with the chief complaint of difficult hearing. Many of the older children, who were checked with an audiometer, showed both conductive and perceptive hearing losses of 20 to 50 db. in the same ear as the mastoiditis.

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TABLE 1

SYMPTOMS OF MASTOIDITIS

- Earache
- Fever
- General malaise
- Discharge from ear
- Repeated colds
- Hearing loss
- Headache
- Vomiting
- Pain on pressure over mastoid bone
- Restlessness and crying at night

TABLE 2

SIGNS OF MASTOIDITIS

- Inflammation of ear drums
- Bulging of affected drums
- Secretory otitis
- Retraction or distortion, or both, of normal landmarks
- Purulent discharge from ears
- Hearing loss—usually greater on the affected side
- Fever
- Pain on pressure over mastoid

Physical findings (table 2) varied from acute otitis media and secretory otitis to retracted drums with loss of normal landmarks.

The duration of symptoms in this group of 77 children varied from one week to seven years (in 1 child), with the average being about three months.

During this time, these children, who were treated by others, as well, received moderate to inadequate amounts of antibiotics. I try to treat all children who have acute otitis media with antibiotics for at least two weeks. If, at the end of this time, the ear or ears, nose, and throat appear to be normal; the throat cultures, if positive, have become negative; the child appears to be healthy and an audiometric examination, if one is possible, is normal; I feel that the child is cured and discontinue treatment. Of course, there were many in this group who did not fulfill these criteria (table 3).

If a child had been treated for an ear infection two weeks or longer and the infection was still present or if the child was moderately to acutely ill, he was immediately hospitalized for further examination and treatment.

Table 4 summarizes the findings of the mastoid roentgenograms made on these 77 children.

Almost always, when the previously mentioned criteria for the successful treatment of otitis media had not been fulfilled, mastoid roentgenograms revealed the presence of mastoid infection.

White blood cell counts and sedimentation rates (Westergren) have not been of equal value in delineating mastoid infection. White blood cell counts were often normal, even in the children who were acutely ill. Sedimentation rates, on the other hand, were almost uniformly elevated, averaging 46 mm. in the children who came to surgery and 40 mm. in those who were treated medically.

CASE REPORTS

The following case report illustrates this in detail.

Patient L. D., a 3-year-old white male, had intermittent ear and throat infections since birth. His tonsils and adenoids had been removed by a competent otologist one year before the mastoiditis developed. Rubeola developed three months before his mastoid infection was diagnosed, and, following this, he was seen by me, on several occasions, for ear and throat infections. On one visit I performed a right myringotomy. Physical examination at the time of hospitalization revealed a very irritable, ill child. His right drum head was inflamed and bulging. There was no mastoid tenderness. The parents had not noted any recent hearing loss. The throat was moderately inflamed. The left ear was normal, as was the rest of the examination.

Laboratory findings were as follows: leukocyte count was 7,600 with 47 per cent neutrophils, sedimentation rate was 46 mm. in one hour, and mastoid roentgenograms revealed diffuse haziness and inflammatory changes in the right mastoid bone.

A right mastoidectomy (complete) with left myrin-

TABLE 3

CRITERIA FOR TREATMENT OF OTITIS MEDIA

1. Adequate amounts of antibiotics (at least 1 million units of penicillin each day for two weeks)
2. Nose, throat, and ear cultures, if positive, should have returned to normal.
3. Appearance of affected ear should be normal at end of treatment.
4. Hearing by audiometric examination should be normal.
5. The patient should be eating, sleeping, and playing as usual.
6. Abnormal leukocyte counts and sedimentation rates should have returned to normal.

TABLE 4

ROENTGENOGRAPHIC FINDINGS OF MASTOIDITIS

- Haziness of normal mastoid outline
- Destruction or distortion of normal mastoid outline
- Prominence of anterior border of lateral sinus
- Sclerosis of mastoid cells
- Evidence of acute or chronic inflammatory changes, or both, in mastoid cells
- Density of mastoid air cells with limited pneumatization

TABLE 5

FINDINGS AT MASTOID SURGERY

Heavy mucoid secretion
Soft necrotic bone
Hyperplastic tissue
Stringy, yellowish secretion
Hypertrophic mucous membrane
Granulation tissue

gotomy and insertion of polyethylene tube and adenoidectomy were done by the otologist on the fourth hospital day.

Surgical findings showed that the mastoid area was sclerotic and contained a moderate amount of mucoid material. The mastoid antrum also contained considerable mucoid material.

This child has had no further trouble since surgery one year ago.

Of the 77 children in this study, 39 have had surgery, an incidence of 50.6 per cent. All but 2 have done well. One of these has had a moderate amount of hearing loss.

The following case will illustrate the history of a child who has had hearing loss after surgery.

J. B., a 4-year-old white male, became ill suddenly one day, with a temperature of 103° F. He had had his tonsils and adenoids removed one year previously because of repeated attacks of tonsillitis. With the onset of his fever he complained mostly of leg ache and stomach-ache. Physical examination revealed an acutely ill child who had a bilateral otitis media, with fluid retention in the right ear.

Laboratory examination showed that the leukocyte count was 11,850, with 80 per cent neutrophils; sedimentation rate was 38 mm. in one hour. Mastoid roentgenograms revealed a bilateral mastoiditis, especially marked on the right side.

After twelve days of antibiotics, mastoid roentgenograms disclosed that the left mastoid was clear, but the right mastoid was still infected. At operation on the right mastoid, the mastoid bone was soft and mushy and filled with stringy, yellowish-brown mucoid material. There was a large antrum surrounded by soft necrotic bone and filled with hyperplastic tissue and a heavy mucoid secretion. This surgery was performed about one year ago. I have seen this child recently with a cold, fluid in the right ear, and hearing loss of 20 to 30 db. in all frequencies.

Findings at surgery are summarized in table 5 and consisted usually of a large amount of thick mucoid material with hyperplastic tissue. Actual necrosis was found in a moderate number of children.

DISCUSSION

It is my experience, in treating children for colds and ear infections, that mastoiditis is still a common complication of the ordinary ear infection. One should have a high index of suspicion toward any child who has had an ear infection more than two weeks or who has a history of recurrent ear infections.

Pullen[6] has accurately stated the hearing problem. We know that a patient with an acute otitis media will have a decreased air conduction with possibly no change in bone conduction, but, as the mastoid becomes involved, extensive loss of bone conduction may follow. The combined picture is one of much indecision on the part of the physician, a confused patient, and recurrence of trouble in the same ear over long periods of time.

Richardson[7] states the problem concisely. Is there a saving in health, time, or money to the patient given repeated courses of antibiotics, as compared with a clean-up trip to the operating room? There is no saving to those who have had several bouts of antibiotics and long periods of malaise. These are the patients who finally wonder if surgery is not the answer; how disappointing it must be for such a patient to have his otologist suggest further antibiotic treatment.

SUMMARY

It is my conclusion that mastoiditis is a common complication of acute otitis media in children and that merely treating an ear infection medically until the pain and fever have subsided is not enough to prevent this complication.

If an otitis media is treated adequately for at least two weeks, many cases of mastoiditis can be prevented. In those children in whom mastoiditis develops, surgery is a better answer than continued treatment with antibiotics.

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The Modern Psychiatric Treatment Program at Willmar State Hospital

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In the April issue of The Journal-Lancet, Dr. D. H. Clark[1] described the development of the "open" mental hospital in England. Many of the changes he described are becoming increasingly prevalent in the mental hospitals of this country. The modern state hospital, except for the buildings housing it, is losing rapidly all resemblance to the traditional state hospital.

Willmar State Hospital, Willmar, Minnesota, is a good illustration of how the direction of development is changing in many state hospitals of the midwest.

BACKGROUND

Willmar State Hospital, like most midwest state hospitals, is located in a rural setting. It is about 2 miles from the city of Willmar, which has a population of 11,000. The hospital has a licensed bed capacity of 861; however, unlike the traditional hospital, it is not overcrowded. On June 1, 1962, the census was 13 below the licensed bed capacity. This reduction in overcrowding, with attending benefits, was achieved during the preceding two years by a drop of 360 in the patient population.

The buildings, for the most part, are old, homelike, 60-bed cottages scattered through the parklike grounds. This area, with many large trees and rolling lawns, is surrounded by farm land on 3 sides. It overlooks a lake.

Since May 1961, none of the buildings or wards has been locked except after dark, and patients move freely throughout the grounds. All patients who are physically able go for their meals to a self-service cafeteria in a separate building and for their activities to areas away from the cottages where they sleep.

Historically, Willmar State Hospital had suffered from the usual disadvantages of all state hospitals—inadequate financing, overcrowding, understaffing, and isolation from the community. In January 1960, it was decided to reorganize its work into 5 distinct programs so that staff time could be concentrated in areas most likely to produce therapeutic results and so that personnel teams could gain experience in handling specialized needs.

The traditional system of "ward physicians" was discarded. In this system all clinical functions of a certain section of the hospital, as well as the physical and psychiatric care of patients in that section, had been under the direction of one physician. After the reorganization as many administration functions as possible were assigned to appropriate personnel; the physical care of many of the patients was handled through community physicians, with the psychiatrist's time concentrated chiefly on direct work with patients.

Separate programs, each with its own staff and its own quarters in a special part of the hospital, were established to fulfill each of the 5 major hospital functions: (1) treatment of acute psychiatric illnesses; (2) treatment of persons addicted to alcohol or drugs; (3) care of patients already hospitalized for many years; (4) medical and surgical services to the entire hospital population and diagnosis and intensive therapy of newly admitted geriatric patients; and (5) research and in-service education.

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Staff members were assigned according to their ability to work effectively without feeling too restrained by traditional roles.

CHANGES IN LONG-TERM PATIENT CARE

In January 1960, Willmar State Hospital had 850 patients housed in "continued treatment" wards under the direction of 2 or 3 physicians. Obviously, these physicians had time for no more than superficial acquaintance with the needs of the individual patient; they had to rely heavily on the reports of the nursing service. In addition, much of their time was spent on administrative details, such as transfers between wards, privileges, and arrangements for home visits. When new patients failed to respond promptly to treatment, they were sent to these "continued treatment" wards, where they associated with long-term patients, many of whom had been deprived of socialization because of chronic illness and years of living in an impoverished closed-ward environment.

It was decided that the function of the hospital in caring for these long-term residents was separate and distinct from the function of diagnosis and intensive therapy of newly admitted patients.

On May 1, 1960, the 76-bed building known as the "Receiving Hospital" became the "Intensive Treatment Unit." This involved a change of function as well as name.

A new hospital admissions procedure was established. Geriatric patients were admitted directly to the hospital ward. Patients with a problem of alcohol or drug addiction were admitted directly to appropriate services.

All nongeriatric mentally ill patients coming from the 17-county receiving area served by the hospital were admitted to the "Intensive Treatment Unit." This building became a completely open unit, with the goal of receiving patients primarily on a voluntary basis and of returning them directly to the community, avoiding transfer to any other part of the hospital. To facilitate this program, professional staff was concentrated in this area. A policy was established that no patient would be transferred to the wards for the chronically ill unless he had had intensive care for a minimum of a year in this unit.

The former "continued treatment wards" became the "activation service." Emphasis here was on "activating" the large group of chronic closed-ward "sitters" in those wards. This program was made the major responsibility of the nursing service, social service department, and rehabilitation department, under the general guidance of the assistant superintendent, a trained hospital administrator.

SHIFTING PERSONNEL RESPONSIBILITIES

The nursing service was given direct responsibility for transfer of patients between wards and for all matters of ward administration and personal care. Working with the social service department, the nursing service could arrange appropriate visits to the community or recommend nursing, boarding, or foster home placement. The social service department had final responsibility for the arrangements with families or social agencies for the proper community plans for the patients and for financial arrangements and agency contacts.

In Minnesota, follow-up care is vested in the county welfare staffs. They follow through after initial contacts have been made by hospital social service. The only exception is when the family and family physician take over responsibility for convalescent care.

This activation program was followed with some 800 patients whose average hospital stay was twenty-four years and whose average age was 64. Most of them had long-term schizophrenic illnesses, had grown old in this or other state hospitals, and for many years had lost all community contacts. The nursing staff knew a good deal about their behavior, their occasional visitors, and their home situations when the family had maintained contacts over the years.

In this type of program, the nursing service fills the role of parents in ordinary family life. The staff makes decisions about activities and responsibilities suitable for the individual patient. They refer him to the medical staff for intercurrent illnesses, for physical disabilities, and for his annual physical examination. Before a patient leaves the hospital he is referred to the appropriate physician for an evaluation of his physical status and necessary recommendations regarding medications or medical follow-up. Referrals are made to the physician as to the advisability and regulation of psychopharmaceutic drugs.

RESULTS OF THE NEW PROGRAM

Evaluation of this program shows that, after two years, the population of this unit has dropped from 850 to 415. This remarkable decrease can be accounted for by the activity of the social service placement program and by the fact that new patients were not being added. Patients in the Intensive Treatment Unit returned home and did not swell the ranks of the chronic population.

All 415 patients remaining in the activation wards now are housed in open units; although at the beginning of the program more than half these wards had been closed. Local dining rooms were eliminated. Patients leave their wards 3 times a day to go to a modern central cafeteria. They can select their table companions; men and women sit together, and a patient can elect to go early or late during the meal period.

The elimination of overcrowding has permitted better living conditions on the wards. Gone are the wards with beds so crowded together there was no room for furniture. Patients have bedside chairs; some have bedside tables. Provision is made for each patient to have his clothing near his bed. Men shave themselves. Women are permitted sewing materials, scissors, and access to ironing equipment. Every effort is made to make each of the 60-bed cottages homelike through the cooperation of patients, employees, and volunteers. Magazines, plants, draperies, television sets, soft drink machines, and, frequently, provision for coffee-making create a situation not unlike many group-living situations in the community.

Better personal grooming and an improved appearance of the wards have resulted. More important has been the notable increase in spontaneity and activity on the part of many patients. A concerted effort has been made to see that each patient has a balanced schedule of work, rest, and recreation. It has been demonstrated that patients, even after years of being deprived of opportunity for independent decisions, can take responsibility for their own care and can take part in work and recreational programs to an unanticipated extent.

Some patients respond more dramatically than others. Many show little change in the patterns of their thinking, though their behavior improves. A minority remain resistant to efforts at activation. However, the over-all improvement in the chronic patient population has been striking.

CHANGES IN CARE OF NEWLY ADMITTED PATIENTS

What changes have occurred in the state hospital care of newly admitted psychiatric patients? A mentally ill patient entering the hospital today faces an entirely different prospect in terms of length of hospitalization than he did a few years ago.

Seventy-four per cent of the patients entering the Intensive Treatment Unit at Willmar State Hospital are returned home within a three-month period and 92 per cent within a six-month period. Less than 1 per cent require more than a year of treatment. Of more than 770 patients admitted during the past two years, only 3 were transferred to the activation wards.

Formerly, after a short stay on a receiving unit, many patients were transferred to the continued treatment wards for prolonged care. The reasons for the change are many. Most schizophrenic patients, after hospitalization for a few weeks or months, now show sufficient improvement with psychopharmaceutic drugs so they can return home, where they are kept on maintenance doses by their family physicians. Patients requiring psychotherapy or assistance from trained social workers now find facilities available which enable them to continue in therapy after leaving the hospital, either through local mental health centers or through a psychiatrist in private practice.

This changed prospect for the patient is a result of improvement in therapeutic technics and of altering attitudes, in and out of the hospital, toward the mentally ill. This change of attitude is reflected in the greater freedom given patients in the open-door hospital. It is seen in the fact that roughly 80 per cent of those currently entering the intensive treatment unit do so on a voluntary basis, reflecting their greater acceptance of the state hospital as a treatment facility.

The principle of early hospitalization and early return is recognized as being as basic in the handling of mental disorders as it is in the handling of physical illnesses. It is expected that mental illnesses, like physical illnesses, will be treated primarily at a community level. Hospital facilities will be reserved for special diagnostic procedures or short-term intensive therapy and for the treatment of illnesses in which progress can be more rapid in the specialized hospital environment. Convalescent care and the management of chronic illnesses can be community-based.

With the widespread acceptance of these principles, with improvement in psychiatric therapy, and with the resulting disappearance of the malfunctioning associated with overcrowding, the modern state hospital will be transformed into a truly useful diagnostic and treatment center for psychiatric illnesses.

CARE OF THE AGED

One additional problem requires further definition. This is the role of the state hospital in the care of the aged. All too frequently, in the past, elderly people who were feeble and mildly confused have been hospitalized in a state hospital primarily to avoid the cost of nursing care in the community. With many more nursing and convalescent-home beds becoming available and with communities accepting more responsibility for the care of their elderly citizens, a decrease in this misuse of beds for psychiatric patients in the state hospital is evident.

The state hospital can provide a real service by offering specialized diagnostic facilities and short-term therapy for those elderly patients whose behavior has become so disorganized as to make care in a general hospital or nursing home impossible. However, such acute disturbances of behavior usually respond within a matter of days or weeks or, at most, a few months. The behavior then improves sufficiently so the patient can be returned to a community facility.

The state hospital also can serve as a teaching center for operators of nursing homes and for others responsible for the management of the disabled, mildly confused, and disorganized elderly person.

Willmar State Hospital has, in addition to the functions usually served by the typical state hospital, a special program for the more than 1,600 persons with problems of alcohol admitted annually. This was the subject of a separate report.[2]

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Orodigitofacial dysostosis is encountered in about 1 in 100 cleft palate patients and seems to affect only females. Other than the cleft palate itself, the most common manifestations are hyperplasia of the frenula and clefts that divide the tongue into 2 to 4 lobes. Facial changes include lateral displacement of the medial canthi, aquiline thinning of the nose, pseudocleft in the midline of the upper lip, alopecia, and seborrheic changes over the malar eminences. The nasion-sella-basion angle may be flat. Dental anomalies found in the condition are missing lower lateral incisors, supernumerary cuspids or bicuspids, malposition of maxillary canine teeth, and infraocclusion. Finger abnormalities may be encountered, and the short tubular bones of the hands and feet are short and thick on roentgenograms. Other possible changes include hypoplasia of the malar bones and alar cartilages, mucous membrane fistulas of the lower lip, porencephalous cyst, and subdural hygroma. Patients may be mentally retarded and subject to trembling.

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Management of critical illness apparently is enhanced if body temperature is lowered to 28 to 33° C. for seven to twenty-two days. Severe gastrointestinal hemorrhage can be controlled by several days of hypothermia at 31 to 33° C. Hypothermia reduces tachypnea accompanying fever or anxiety and improves ventilatory function. However, ability to cough is reduced, and tracheostomy or intratracheal catheter suctioning is necessary to assist clearing of the tracheobronchial tree. During prolonged, moderate hypothermia, renal function remains satisfactory and urinary output increases. Significant reduction of insensible water loss during hypothermia necessitates adjustment in daily parenteral fluid therapy. If shivering is prevented, hypothermia of 30 to 33° C. for seven or eight days does not damage cardiac function. Cardiac sparing is suggested by significantly reduced pulse rate and slightly diminished blood pressure.

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Anoplocephalid Tapeworm Infection in a Child

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THE ANOPLOCEPHALID TAPEWORM is ordinarily found in cattle, horses, and sheep. Some species of the Anoplocephalidae family, such as Bertiella tapeworm, have been described in the chimpanzee and orangutan; however, in man this parasite is very rare and has been found only by accident in the few reported instances.

The first specimen of Bertiella in human beings was discovered in a boy of the Mauritius Island. Later, a few cases were reported in India. According to available literature, there have been no anoplocephalid tapeworm infections reported among human beings in the United States. For this reason we should like to report the case of a young boy with an anoplocephalid tapeworm who was treated in a Fargo hospital and observed by members of the clinic staff.

CASE REPORT

A five-year-old boy was hospitalized because of severe recurrent abdominal pain with intermittent vomiting. The physical findings were essentially normal. Laboratory and x-ray studies showed that hemoglobin was 12.7 gm. per 100 cc., and leukocytes, 7,700 per cubic millimeter, with 20 lymphocytes, 2 monocytes, 52 segmented, 25 bands, and 1 eosinophil. Hematocrit was 41 volumes per cent; sedimentation rate was 10 mm. per hour. Urinalysis revealed specific gravity, 1.031; pH, 5.0; and negative sugar and albumin. Gastrointestinal roentgenograms, including flat and upright films of the abdomen and an upper gastrointestinal series, showed no abnormalities.

The stool was soft and brownish in color. The first laboratory specimen contained a small amount of soft stool and 3 motile portions of a very unusual tapeworm, about 12 by 5 mm. in size, each consisting of multiple short, broad, and very thick segments (figure 1). Movements consisted of alternate lengthening and contraction. Microscopic examination of the stool specimen revealed many large ova about 40 to 60 μ in diameter (figure 2).

A well-developed ovum had 3 coverings, the inner of which formed a pyriform organ. At the bigger pole of the pyriform organ was located a globular onchosphere. By microscopic examination under high power, the onchospheres of well-developed ova revealed 3 pairs of hooklets, which were arranged side by side and directed toward the bigger pole of the pear-shaped inner membrane. Our laboratory diagnosis, based on the described morphologic characteristics of ova and proglottids, was Bertiella tapeworm of the Anoplocephalidae family.

For confirmation of our laboratory diagnosis, some of these tapeworm segments and a small amount of stool specimen were forwarded to the Communicable Disease Center, Atlanta laboratory. Our laboratory diagnosis was confirmed by Dr. Healy. In addition to ova of tapeworm, there were also many trophozoites and cyst forms of Giardia lamblia in the stool specimen.

The examining physician noticed that the patient induced vomiting by putting his fingers down his throat. He also showed some nervous traits during hospitalization. After administration of hydroxyzine pamoate (Vistaril), 1 tsp. twice daily, the patient was relieved of all abdominal pain and vomiting and he was discharged from the hospital. Following several days' medication, the boy passed a tapeworm, about 45 cm. in length, with his stool.

DISCUSSION

At the present time it has not been possible to establish how the anoplocephalid tapeworm infected the boy. According to the information we received from the paitent's mother, the boy's only direct contact with domestic animals was with a cat. She also mentioned that the boy

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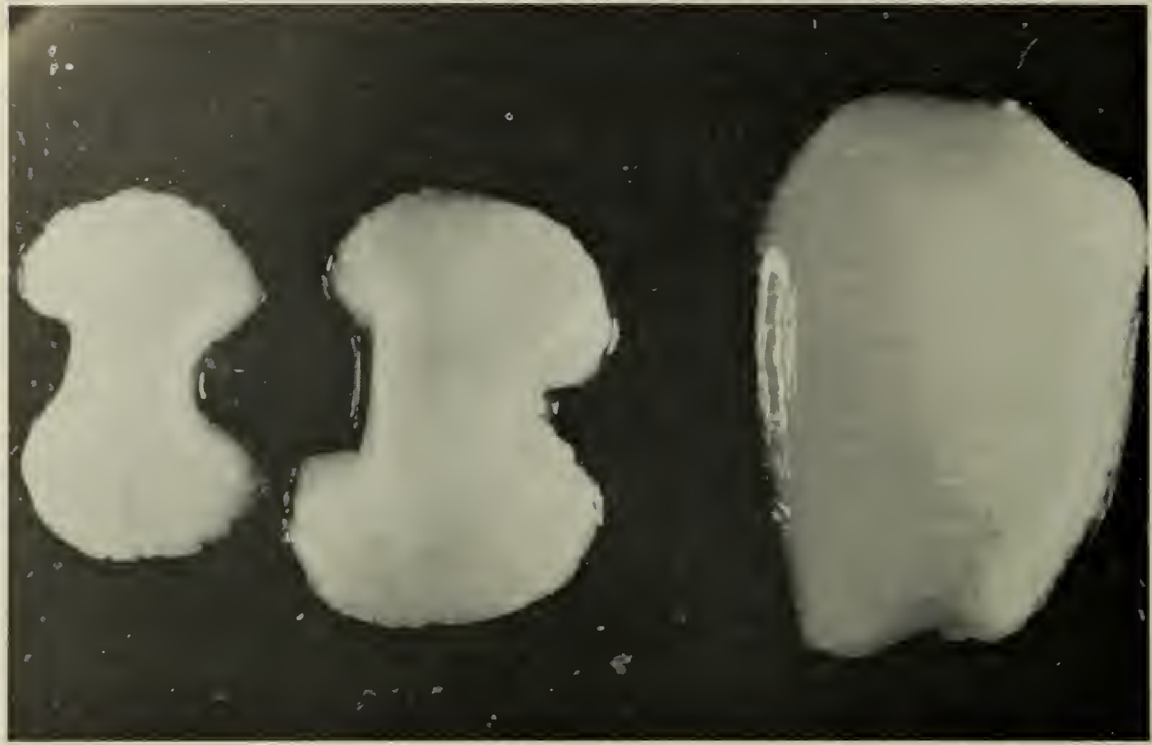

Fig. 1. The segments of Bertiella tapeworm, about 10 to15 mm. wide. The proglottids are less than 1 mm. in length and are shed in blocks of 20 to 22 or more.

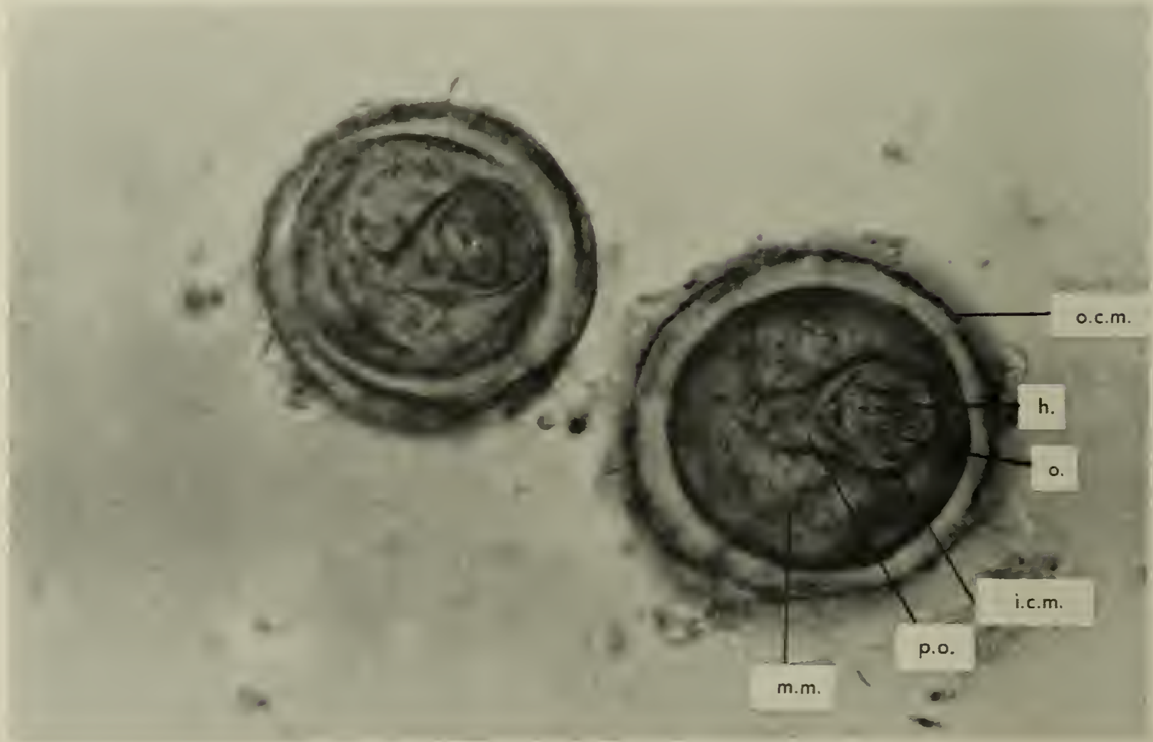

Fig. 2. The ova of Bertiella tapeworm with a pyriform organ. About 40 to 60 μ in diameter. Note: o.c.m., outer-cell membrane; i.c.m., inner-cell membrane; p.o., pyriform organ; o., onchosphere; h., hooklets; and m.m., mucoid material.

had a friend in their neighborhood who had a small monkey. It is possible that the monkey was harboring this parasite and infected mites, which are intermediate hosts of this parasite. There are no data in the literature to indicate that man might be infected without an intermediate host.

Anoplocephalidae require an intermediate host, an oribatid mite belonging to the Galumnidae, Liacaridae, Notospididae, or Ceratozetidae family. The anoplocephalid eggs liberated with the feces are swallowed by the oribatid mite and start their development in the mite's body cavity at a temperature of 18 to 20° C. A fully formed cysticercoid develops after one hundred forty-five to one hundred fifty days. Oribatid mites harboring cysticercoids are swallowed by horses, mules, and sheep with their feed in the stable and outdoors.

It is not definitely established how the anoplocephalid tapeworm Bertiella infects man, but it is logical to presume that human infections are induced by the same type of intermediate hosts as described in these animals.

SUMMARY

The article reports a case of Bertiella tapeworm infection in a 5-year-old boy whose most likely source of infection appears to have been a pet monkey in the neighborhood.

This parasite is ordinarily found in monkeys and orangutans and only accidentally in human beings. According to available literature there have been no anoplocephalid tapeworm infections reported in man in the United States.

The author wishes to express appreciation to Dr. James H. Coffey for preparation of the photographic illustrations and correction of the manuscript, to Dr. George R. Healy for the confirmation of our laboratory diagnosis, and to Dr. Myron Andrews for his interest and suggestions.

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3. ERSHOV, V. S.: Parasitology and Parasitic Diseases of Livestock. Translated edition available from Office of Technical Service, U. S. Department of Commerce, Washington, D. C., 1960. Russian edition published in Moscow: State Publishing House for Agricultural Literature, 1956, p. 78.

CONGENITAL mitral stenosis is usually heralded by congestive cardiac failure within the first year of life. The infant may have recurrent bouts of pulmonary edema and pulmonary infections, is usually intolerant of exercise, and fails to gain weight. Auscultatory findings that suggest the diagnosis include a left precordial bulge and systolic or diastolic thrill located at the apex and accompanied by murmurs, which are loudest at the apex, and accentuation of the pulmonic component of the split-second sound. Electrocardiographic and roentgenographic findings will be suggestive of left atrial and right ventricular enlargement. The right atrium may also be enlarged, but left ventricular hypertrophy is usually associated with coexisting anomalies, which are common. These include aortic stenosis, patent ductus arteriosus, and coarctation of the aorta. Patent ductus does not produce the usual changes in systemic blood pressure when associated with congenital mitral stenosis. When these signs are suggestive of mitral stenosis, with or without associated anomalies, the diagnosis may be strengthened by finding, on cardiac catheterization, an elevation in the pulmonary arterial wedge pressure and a pressure gradient across the mitral valve. With left-sided cardiac catheterization, other anomalies may be identified or excluded. Angiocardiographic evidence of late emptying of the left atrium indicates an obstructive lesion at the mitral valve. Only surgical intervention seems likely to provide long survival for these infants, but the operative mortality is high. Complex deformities of the valve and chordae may preclude complete correction, and failure to detect a patent ductus arteriosus may also denigrate the results. An open approach probably has technical advantages and may permit replacement of the mitral valve in some patients.

L. P. ELLIOTT, R. C. ANDERSON, K. AMPLATZ, C. W. LILLEHEI, and J. E. EDWARDS: Congenital mitral stenosis. Pediatrics 30:552-562, 1962.

Notes from a Medical Journey

Barcroft Laboratory
White Mountain, California

23 July, 1962

Dear Jay:

You have had many letters from me from unusual places abroad. Here is one from an unusual spot, too, but this time in the U.S.A., only some 300 miles from my old home in Berkeley, California. The Barcroft Laboratory is the main station of the University of California High Altitude Facility. Here we are at about 12,500 ft. up on White Mountain.

On the 20th, at 10 p.m., Dr. John H. Talbott (editor of the J.A.M.A., formerly head of medicine at the University of Buffalo) and I squeezed into a stifling Greyhound bus at Las Vegas and at 1:45 a.m. dismounted at a desolate fork in the road near Goldfield. As planned, an old Navy ambulance was waiting to drive us to our first destination at 10,200 ft. But we blew a tire so it was nearly 6 a.m. when we lurched up to the untidy clutter of huts that is Crooked Creek Station.

Drs. D. B. Dill and F. G. Hall rolled out of their bunks to put us down for an hour's rest before starting basal metabolism and respiratory tests. Bruce Dill, long time head of the Harvard Fatigue Laboratory, recently retired from his job as chief of medical research of chemical warfare, U. S. Army, and "Greg" Hall is professor of physiology at Duke University. After arterial punctures and more respiratory tests, we came up here to "Barcroft" the next day, and day after tomorrow we go to the summit for final testing.

The reason for all this goes back to 1935 when we spent some months in the Andes on the border of Chile and Bolivia studying acclimatization to high altitude. Recently, Bruce dug out the old data from altitudes up to 20,140 ft., where Brian (now Sir Brian) Matthews and I spent a week suffering more from sleeping in a hole in the snow (50° below at night) than from arterial oxygen saturation of 70 per cent.

So Bruce got the idea, and money for it, of repeating the tests and measurements made when we were twenty-seven years younger. Drs.

W. H. Forbes and Ross McFarland, still on the Harvard faculty, were also on our Andean expedition and have just left after their tests here on White Mountain. Unfortunately, Matthews can't get away from England. E. Hohwü Christensen, also with us in the Andes, is on loan to the Indian government from his professorship at Stockholm; I saw him in Bombay in February. The remaining 2 men on the Andean expedition were Harold Edwards, who had a fatal coronary many years ago, and Dr. E. S. Guzman Barron, of the University of Chicago, who died more recently. Still, this repeat on the 6 of us should show what nearly thirty years of aging can do to the complex functions involved in the response to altitude.

This University of California High Altitude Facility, supported by federal grants and from fees, caters to many kinds of visiting scientists. For example, 2 anesthesiologists, who were testing their theory of the importance of the spinal fluid pH and pCO_2 in the control of respiration, left this morning; this afternoon a group of astrophysicists arrived. There is a fair amount of laboratory gear here and investigators bring special equipment with them according to their needs. The dormitory has 18 double-decker bunks, there is hot and cold water, and a cook provides the kind of abundant, "wholesome grub" characteristic of a Boy Scout camp (we take turns with the dishes). When time permits, we contemplate a tremendous view of these weathered, barren White Mountains (only small patches of snow in July) and to the west, across Owen's Valley far below, the jagged range of the Sierra Nevada. Straggling up White Mountain to around 11,000 feet are the unique bristle-cone pine trees, the oldest living things in the world, ancient when the present patriarchs of the sequoias were seedlings.

So far the tests show that we have indeed deteriorated since the days in the Andes but perhaps less than we had feared. One change, in myself at least, is less joyful acceptance than in 1935 of the discomforts of dreary high places where the likelihood of crushing headaches and Cheyne-Stokes respiration at night increases with age. And, while I still like exercise, I find exercising to exhaustion is no longer so attractive.

Barren heights, cold, and low arterial oxygen saturation do not engender ebullient spirits. I remember the somber Indians on the Altoplano of Chile, Peru, and Bolivia. Even if they do sleep without literally gasping for breath at 12,000 to 17,000 ft., they rarely laugh except when they get drunk--which is as often as possible. I gather the same is true in Tibet.

I'll append a note after the work on the summit. Here I have autographed a couple of copies of "Eat Well and Stay Well" but for once you have a letter that is not full of talk about atherosclerosis, cholesterol, and dietary fats.

Las Vegas Airport
27 July, 1962

Writing a letter is difficult in a crowded shack of an airport at 95° F. (it is 109° outside), especially in the din of a hundred slot machines being fed by sloppy, half-naked morons. But I am sustained by anticipation of leaving soon for more civilized parts and by relief at getting here safely.

My last stage from White Mountain was a chartered single-engine Cessna plane from Bishop, California. Over the middle of a lunar landscape the engine quit. The pilot got it going again quickly and then said, "Doc, I don't think we have enough gas to make it. What'll we do?"

By the time radiophone checks assured us that we had no place to refuel, we had passed the point of no return and there was nothing to do but cut the fuel injection pressure to the near-stall level, which meant the engine quit every few minutes, and hang on. Both tanks were dry when we finally coasted down to Las Vegas at noon.

The stay at the summit (14,246 feet), where we started the final tests at 3 o'clock this morning, seems very long ago, even though my hematoma, from an unlucky arterial puncture, is still fresh and my respiration is far from back to normal. Apparently I hyperventilated at a great rate for several days, ending with an arterial pH of 7.57 to 7.61, which may account for the severe headache that is only now subsiding.

So ends another adventure. It will be interesting to remember some day but not to repeat. See you soon, I hope.

As ever,

Ancel Keys

Ancel Keys

AK/ji

The Girl Who Didn't Go to China

OLGA S. HANSEN, M.D.
Minneapolis

THE STORY of Hermina Hermanson Hartig, M.D., begins well before the date of her birth on January 13, 1899, in Wahpeton, North Dakota. Her parents, both born in Norway, were brought to Minnesota in early childhood and grew up near St. Peter, Minnesota, where they were married. The government plan for settling the prairie country of the Dakotas drew the newlyweds to take up farming on a claim near Wahpeton, where they prospered in the years of abundant crops on the rich plains. Mr. Hermanson died of diabetes at the age of 38, before Hermina was born. His widow remarried and bore 10 more children, 2 of whom died in infancy. Hermina and her brother thus became a part of the Bridston household, although they retained the name of Hermanson.

The objective of the parents was a good education for all 10 children. A paternal aunt of Hermina's, a missionary in China, came for a visit on furlough. Foreign missions ranked high in the interests of the church and family, and, when Hermina was 5, it was decided that she was to be a medical missionary to China; all plans for her were so directed.

Life on the farm was a busy one. Hermina drove the binder; helped with the haying; milked cows, which she preferred to washing dishes; cleaned the barns, assisted by her 6 younger sisters; cared for the chickens; carried eggs 2 miles each way to the post office to exchange them at 10 cents a dozen for groceries; played at farming with improvised and homemade toys; walked 6 miles each way once a week to take music lessons; and played the organ in church. Among the luxuries were oranges twice a year and a barrel of apples in the fall.

Family, minister, and neighbors spoke only Norwegian in the early days, and Hermina knew no English when she started country grade school. Her speech still carries a trace of the mother language.

High school meant living in Wahpeton during the school session. One year she stayed out and taught in a country school near Bottineau, where she earned $40 a month, paid $12 for board and room, and, as was the rule at that time, fired the potbellied stove and cleaned the school house before the pupils arrived for morning classes. In high school, she liked all subjects, especially science, and studied eagerly, graduating in three years in a class of 25 in 1907.

She had planned to enroll at the Woman's Medical College, being embarrassed and shocked at the idea of a class of male fellow students. However, the missionary aunt had lost her husband in a cholera epidemic and came to Minneapolis for a year's furlough, hoping that her niece would live with her. Accordingly, Hermina enrolled at the University of Minnesota, entering classes three weeks late. Professor Sigerfoos literally dragged in a stool for her to sit on in his freshman zoology class. During the next year, she lived at the home of Reverend K. O. Lundeberg, pastor of the Lutheran congregation in Wahpeton and father of Dr. Karl Lundeberg, now director of the Minneapolis Department of Health.

The tall girl with lively blue eyes, wheat-colored hair piled high, very rosy cheeks (long years before cosmetics were used by nice women), the decisive speech with the Norwegian lilt, and the vigor and enthusiasm of her approach to her work was distinctive. Five other girls were in the freshman medical class. Only one other, Dr. Katherine Nye of St. Paul, graduated.

In her junior year, Hermina became engaged to her classmate, Hugo Hartig, and the medical students, enjoying the romance, chanted, "If I go to

China where will Hu-go?" The couple graduated June 11, 1914, and were married the next day. Both her old pastor, Reverend K. O. Lundeberg, and Hugo's father, Reverend Hartig, officiated. Hermina studied home economics at the University of Minnesota during her husband's year of internship at the University Hospital.

After internship, Hugo proceeded to build a successful medical practice in his home neighborhood in north Minneapolis, and Hermina kept house, read medical journals, and reared babies. In 1918, Hugo volunteered for service and was commander of a military hospital in Hyeres, France. During his absence, Hermina, with her children aged 3 and 1, went to western Montana, where her parents were living, and taught school for a year. In 1919, Hugo returned to his practice and Hermina to their home. Four more children were born, 2 dying at birth.

In 1926, Hugo was killed in an automobile accident, and Hermina was left with 4 young children. With characteristic fortitude and wisdom, Mrs. Hartig became Dr. Hartig. Although she had kept up with the medical literature with her husband, much had been added to medicine in the eleven years since her graduation. A year of attendance at senior medical classes was followed by two years of residency in pediatrics at the University Hospital with Dr. Stewart. In 1929, she opened an office on West Broadway, was record librarian at St: Andrews Hospital, and worked in the baby clinics of the city. In 1934, she became a part-time school physician under Dr. F. E. Harrington.

Ten years later, in 1944, she gave up her private practice for a full-time position as director of health service in the Minneapolis public schools, which she held until 1954. Civil service regulations required retirement at that time.

During Dr. Hartig's twenty-year tenure as school physician and director, many of the procedures now taken for granted, including detection of tuberculosis by Mantoux test and chest x-ray, were started and developed. In collaboration with the Hennepin County Tuberculosis Society, lectures on prevention of the disease were given to high school students. A particularly successful campaign was waged against the ringworm epidemic of 1946, which had spread throughout the nation. Fluorescent lamps were purchased and permitted early diagnosis of the disease. The doctors of the city gave prompt treatment to their patients, and Minneapolis General Hospital served as a diagnostic and treatment center. Because of this early and vigorous action, only 50 or 60 cases of ringworm appeared, in contrast to the hundreds reported in other cities.

A conference with Dr. Haven Emerson, public health authority of Boston, then a member of the Department of Public Health at the University of Minnesota, led Dr. Hartig to consult with the pediatricians of Minneapolis in an effort to prevent the contagious diseases and to modernize quarantine regulations. These formerly required three weeks' absence from school and quarantine of the family, which resulted in a high absence rate and loss of schooling and reduction of financial aid from the state.

Liberalizing of quarantine rules permitted the child immunized by a previous attack of a communicable disease to attend classes. Education of the parents to recognize early signs of ringworm, impetigo, pediculosis, and other contagious states was carried out intensively and ardently under the Public School Health Service. Widespread immunization against smallpox, whooping cough, and diphtheria was promulgated by such educational measures and provided without charge for those unable to pay. The enormous reduction in absenteeism gave tangible proof of the efficacy of the measures taken to control contagious disease in public schools.

During World War II, Dr. Hartig lectured in the University School of Public Health on the health of the school child and so spread her enthusiasm and her experiences beyond her own community.

The Hartig family of 4 includes 2 teachers, 1 housewife, and 1 physician, Dr. Marjorie Hartig, obstetrician and gynecologist of St. Paul and wife of Dr. John Beer, orthopedist. Fourteen grandchildren comprise the second generation.

In 1954, after the eulogies attendant upon her retirement as director of the School Health Service, Dr. Hartig went to Europe for six months. Upon her return, she went to work with the old gleam in her eye; she is now in charge of the Infant Welfare Clinics in 6 suburbs and spends several days a week doing physical examinations for the sports program at the Y.W.C.A. She lives at the home she built in 1955 at 4400 Park Avenue, Minneapolis, and reports that baking and weaving are her hobbies. She is a member of St. Olaf's Lutheran Church and of Alpha Epsilon Iota, women's medical sorority.

TRANSACTIONS OF THE SIXTEENTH ANNUAL MEETING OF THE WOMAN'S AUXILIARY TO THE NORTH DAKOTA STATE MEDICAL ASSOCIATION

Bismarck, June 2, 3, 4, and 5, 1962

The opening session of the sixteenth annual meeting of the Woman's Auxiliary to the North Dakota State Medical Association was held in conjunction with the Auxiliary to the South Dakota State Medical Association at the Apple Creek country club, Bismarck, at 9 A.M., Monday, June 4, 1962. Presiding were Mrs. Warren Anderson, state president, South Dakota, and Mrs. Thomas Longmire, state president, North Dakota.

Dr. E. H. Boerth, president of the North Dakota State Medical Association, brought greetings and urged members to "Speak your belief in deeds." This is the national auxiliary theme for 1961-62. He complimented the auxiliary for its support of the Student Loan Fund and the American Medical Education Foundation. He said the spirit in which the auxiliary supported the WHAM campaign to combat the King-Anderson bill will have a lasting effect. He commended the auxiliary members for their activities in voluntary health organizations, hospital auxiliaries, Future Nurses clubs, church and civic work, P.T.A., women's clubs, and civic affairs. He said members can help in the area of political activity and that politics is so interwoven into the American heritage that to disregard one is to disregard the other. He reported the forming of the Committee on Medical Political Action by a group of interested physicians, the North Dakota counterpart of the American Medical Political Action Committee, or AMPAC. He said the auxiliary has a vital part to play in maintaining a democratic way of life, with its privileges, freedoms and responsibilities.

The pledge of loyalty was led by Mrs. E. A. Johnson, president-elect of South Dakota, and Mrs. J. W. Jansonius, president-elect of North Dakota. The invocation was given by Mrs. Robert Hankins, second vice-president, North Dakota auxiliary.

Mrs. Roger Berg, Bismarck district president, extended a welcome to the convention. The response was given by Mrs. Warren Anderson, state president, South Dakota.

The following members answered the secretary's roll call:

State officers: Mrs. L. T. Longmire, president; Mrs. J. W. Jansonius, president-elect; Mrs. R. Hankins, second vice-president; and Mrs. M. H. Poindexter, treasurer.

Committee chairmen: Mrs. R. W. McLean, nominating; Mrs. T. Q. Benson, parliamentarian; Mrs. L. G. Pray, legislation; Mrs. R. L. McFadden, mental health; Mrs. D. J. Halliday, committee on aging; Mrs. G. H. Holt, bulletin; Mrs. E. O. Heib, publicity; Mrs. W. L. Macaulay, finance; and Mrs. G. R. Richardson, student loan fund.

District presidents: Mrs. G. H. Hilts, Cando; Mrs. Roger Berg, Bismarck; Mrs. C. W. Hogan, Jamestown.

Councillors: Mrs. M. M. Heffron, Bismarck, and Mrs. R. L. McFadden, Jamestown.

Delegates: Mrs. C. Fercho, Fargo; Mrs. J. Houghton, Fargo; Mrs. R. E. Leigh, Grand Forks; Mrs. F. Erenfeld, Minot; Mrs. M. A. K. Lommen, Bismarck; Mrs. John Jestadt, Jamestown; Mrs. L. W. Larson, Bismarck; and Mrs. R. Schoregge, Bismarck.

Mrs. Carroll Holm, Mrs. Roger Buchanan, and Mrs. H. Kermott conducted a memorial service. A short tribute was read and candles lighted in memory of Mrs. L. S. Grosvenor, Huron, South Dakota; Mrs. J. D. Bailey, Rapid City, South Dakota; and Mrs. E. H. Goodman, Napoleon, North Dakota.

The report of the auxiliary to the state association was read by Mrs. R. W. McLean, Hillsboro.

A report on health careers was read by Mrs. P. Regan, Sioux Falls, South Dakota.

Mrs. Longmire announced an art exhibit to be held at the national convention in Chicago.

This concluded the joint session of the auxiliaries.

The North Dakota business session followed with reports on the American Medical Education Foundation and the Medical Student Loan Fund.

Mrs. Gale Richardson presented a plan for a memorial card for the Student Loan Fund. The money will be sent directly to the state treasurer. The state chairman will be notified, and will handle the cards. Mrs. Keller moved, Mrs. McLean seconded, and a motion was carried to print 100 cards.

Mrs. R. E. Hankins gave the editor's report on *News, Views, and Cues*. She suggested a three-year rotation for the staff: first year, business manager; second year, district news editor; third year, editor. This would give continuity to the duties. The alternate suggestion was the possibility of assigning the publication to a district and alternating districts annually. The matter was tabled for future discussion.

Mrs. M. M. Heffron was named convention delegate.

Mrs. L. G. Pray moved that we accept the minutes of the Fifteenth Annual Meeting of the Woman's Auxiliary to the North Dakota State Medical Association as published in the November 1961 issue of THE JOURNAL-LANCET. Mrs. Macaulay seconded the motion and it was carried.

Mrs. R. W. McLean, chairman of the nominating committee, presented the following slate of officers for 1962-63: president, Mrs. J. W. Jansonius, Jamestown; president-elect, Mrs. R. Hankins, Mott; first vice-president, Mrs. C. Smith, Bismarck; second vice-president, Mrs. R. H. Waldschmidt, Bismarck; recording secretary, Mrs. R. L. McFadden, Jamestown; corresponding secretary, Mrs. C. W. Hogan, Jamestown; and treasurer, Mrs. R. Berg, Bismarck.

There were no nominations from the floor and Mrs. Richardson moved that the secretary be instructed to cast a unanimous ballot for the slate of officers. Mrs. Holt seconded the motion and it was carried.

Since there were no members of the resolutions committee present, Mrs. Longmire asked Mrs. Hieb, state publicity chairman, to contact the convention chairman and to work with the resolutions committee from South Dakota in sending letters of thanks to all who had contributed to a successful convention.

Mrs. McLean presented a bill for the past president's pin.

Mrs. Richardson made the motion for adjournment, seconded by Mrs. Hogan. Meeting adjourned.

KATHERINE M. MCFADDEN, Secretary pro tem

Treasurer's Report, Financial Statement, 1961-1962

Income:		
June 6, 1962, Balance on hand	$2,044.01	
Dues: 335 members	1,340.00	
2 associate members	2.00	
1 North Dakota honorary (no dues)		
1 national honorary (no dues)		
Student loan contributions	2,076.57	
Convention expenses (men's society)	200.00	
		$5,662.58
Disbursements:		
Mrs. L. T. Longmire, president,		
A.M.A. convention	250.00	
Chicago convention	120.00	
Expenses	125.00	
Mrs. J. W. Jansonius, president-elect, Chicago convention	120.00	
News, Views, and Cues	300.54	
Miscellaneous fund: Health careers, $25; stationery (state association), $13.15; bank charges, 30 cents	38.45	
Committee chairmen: State treasurer, $12.83; legislature, $6.90; managing editor of paper, $9; nominating committee, $3	31.73	
National treasurer (1 state honorary member dues)	338.00	
AMEF	75.00	
SAMA	100.00	
Student loan—Dean Harwood (includes $100 from state auxiliary)	2,176.57	
Finance chairman of convention	200.00	
		3,875.29
June 1, 1962, balance on hand		$1,787.29
AMEF donations	$1,129.92	

Mrs. M. H. Poindexter, Treasurer

PRESIDENT'S REPORT

The woman's auxiliary to the North Dakota State Medical Association was organized sixteen years ago. At our annual convention we will honor our first president, Mrs. P. G. Artz of Jamestown. Mrs. Artz has continued to be active in auxiliary work through the years.

Methods of raising funds for the American Medical Education Foundation were left to each district this year. Some of the most interesting and successful projects included a smorgasbord, a Hawaiian luau, and a potluck supper. To date, contributions have increased 72 per cent over last year. Every auxiliary member is an ambassador of good will for the medical profession through her efforts in community service. In our rural state, every locality knows its doctors' wives. Their efforts do not go unnoticed but reflect favorably on the auxiliary and on medicine. Two of our districts sponsor monthly meetings for senior citizens clubs. Auxiliary members provide entertainment, refreshments, and transportation. Another district holds an annual birthday party for the patients in the State Hospital for the Mentally Ill, and each Christmas provides gifts, food, and clothing for 2 needy families. A newly reorganized district with 7 members purchased a "Baby-tenda" and toys for the pediatric department of the local hospital. One district has a special project to aid the North Dakota Camp for Diabetic Children. Our efforts in rural health have duplicated those of other organizations in this field. We have no rural health committee.

The auxiliary was asked by the state association and the American Medical Association and its Auxiliary to participate in opposition to the King-Anderson bill. On February 17, the WHAM campaign was launched with a successful workshop. The Dr. Annis film, "Where is American Medicine Going?", was shown on 3 TV channels covering the state. The Ronald Reagan record was used in all districts, and hundreds of letters opposing the Social Security approach to medical care financing were written.

An important project is the Sophomore Medical Student Loan Fund. This fund receives its sole support from the auxiliary and has aided an average of 9 students a year with loans up to $500. No interest is charged until internship is completed, and then at the rate of 2½ per cent. A total of $2,161 was contributed this year, bringing the total after eleven years to $23,049. The funds are raised by contributions, assessment, dances, and food and rummage sales.

The North Dakota chapter of the Woman's Auxiliary to the Student American Medical Association received $100 from our auxiliary this year to help defray the expenses of its delegate to the national auxiliary convention. Auxiliary members in Grand Forks, where the Medical School is located, open their homes for the SAMA auxiliary meetings, and one serves as liaison between our groups.

News, Views, and Cues is published 4 times a year. It is sent to all members. We are proud to have a healthy, happy relationship with press, radio, and television reporters. They have been very cooperative in securing publicity for us whenever the occasion warrants it. The auxiliary has 331 members in 10 districts. District auxiliaries range in size from 7 to 70 members; most are in the smaller size group. We keep our files in the state medical association's offices. Each year the historian compiles a record of the year's activities and files it with our records.

Health Careers recruitment received special emphasis this year. Each auxiliary member contacted the high school guidance counsellor in her city and offered her services to students interested in medicine or related fields. A new Health Careers Club was formed in 1 district. A Health Careers rally day was held in the fall. We cooperated with the North Dakota Council of Health Careers in placing kits of information in the hands of guidance counsellors in high schools. Career days were sponsored by 3 district auxiliaries.

Civil defense is a field we feel is covered adequately by other civic and state organizations. Auxiliary members have offered their help to these groups but the response has been negative. Four districts had civil defense programs covering material sent by the state chairman.

Our annual convention will be held June 2-6 this year in Bismarck. The South Dakota Auxiliary will help us honor our State Medical Association on their Seventy-fifth anniversary.

Doctor Leonard Larson, president of the American Medical Association, will address our luncheon meeting. Mrs. Stanley Truman, Western Regional Vice-president of the Woman's Auxiliary to the American Medical Association will be our convention guest.

Mrs. Thomas Longmire, President

Membership Report

Membership in the Woman's Auxiliary to the North Dakota State Medical Association this year totals 331. Of this number, 2 are associate members, 2 are honorary members, and 318 are regular members. We have had a decrease in membership this year of 7, but we have 23 new members. Seventeen members did not rejoin.

Traill-Steele had 100 per cent membership again this year.

There are 10 organized medical districts and 10 district auxiliaries in North Dakota.

Fern Jansonius, Chairman

Civil Defense Report

The committee fulfilled its obligations in the following ways:

A letter was sent to each district chairman urging her to become an active member of her local civil defense organization.

The 1961 "Release for State Civil Defense Chairmen" was copied and sent to each district auxiliary.

In April a card was sent to each auxiliary asking for a report on activities in civil defense for the year. This activity ranged from nothing to a great deal. In September, when the cold war was at its hottest, there was great interest in civil defense. However, it waned when the crisis in Germany lessened.

Several districts had programs and circulated information. A few had outside speakers. In Minot, the District Nurses Association had a series of classes for emergency civil defense. Our nurse-members attended. This lack of interest is not peculiar to North Dakota. The Wall Street Journal reported that firms which constructed shelters sold very few after an initial flurry; many discontinued operations. Thinking seems to be that the government should take the lead in preparing community shelters.

Publicity Report

At the suggestion of Mrs. M. M. Heffron, councillors at the fall board meeting were asked to have district members delegated to publicity consult her before offering official auxiliary publicity to news media.

On a state level, following the 1961 convention in Fargo, each district was provided with a picture and story publicizing the Student Loan Fund project's tenth anniversary.

News concerning the June convention in Chicago was released by the Associated Press statewide, along with information on North Dakota delegates.

A survey of district publicity indicated that the local press is most cooperative in reporting our notices of meetings, and projects of each auxiliary unit.

Projects benefiting AMEF and the Student Loan Fund, such as the First District ball and the Third District annual dinner dance received excellent coverage.

The *Bismarck Tribune* printed several photographs of new officers, and the luau to honor the state president and raise funds for AMEF. Activities of members outside auxiliary projects, such as assistance with the Heart Fund Drive and a State Health Careers meeting were well covered, indicating an alert and active publicity committee.

The *Jamestown Press* publicized the Seventh District's Future Nurses club regularly. It also publicized the birthday party sponsored by the auxiliary for patients at the State Hospital. WHAM had excellent coverage in local and Stutsman County newspapers, radio, and TV.

Four districts have publicity chairmen; the others are small and mostly social memberships. Several units not sponsoring a project have only their meetings to publicize.

A letter was sent to each district the last week of May to urge publicity for the state meeting in Bismarck and local delegates.

During this convention a statewide effort is being made, with the aid of the convention publicity chairman, Mrs. Joseph Cleary of Bismarck, to send to each district a newsworthy item and photo.

Over-all publicity has been excellent this year, with the press cooperating fully with our requests. I would urge again that each district councillor be aware of her responsibility to audit news items and to encourage publicity chairmen to seek more and more beneficial publicity.

Mrs. Edwin O. Hieb, Chairman

Legislation Report

The auxiliary was asked by the State Medical Association and the AMA and its auxiliary to participate actively in opposition to the King-Anderson bill.

In February Mrs. Lee-Ann Elliott and Mr. Bernard Harrison of the AMA office in Chicago visited Fargo to launch the WHAM campaign. All districts were invited to attend the workshop. Complete information regarding the bill was given. The work kits contained all the materials necessary to make our views clear and were easy to use. Kits were mailed to district legislation chairmen who were unable to attend. Following the workshop, Mrs. Elliott, Mr. Harrison, Mrs. Longmire, and the committee chairman appeared on a TV panel to state opposition to the bill.

Last fall suggestions were mailed to all districts for a legislative program for county auxiliaries. All districts received information regarding the WHAM campaign and the Ronald Reagan record for "Operation Coffee Cup." Only 4 of 10 districts made use of the materials.

The 4 districts taking an active part in medical legislation are doing good work. Many meetings were held for discussion of the King-Anderson bill. Speakers were obtained, resolutions were adopted, and hundreds of letters were written. The Ronald Reagan record was played at a number of coffee parties.

The film by Dr. Annis, "Where is American Medicine Going?", was shown on TV channels 6 and 4, through efforts of the First and Seventh district societies and the auxiliaries. District Three also planned a film showing.

Doctors' wives have an important role to play in medical legislation. It is hoped that all districts will become active.

Mrs. L. G. Pray, Chairman

Report on the Bulletin

This year we had 107 *Bulletin* subscriptions from some 300 members. This is not a very good percentage and it could be improved vastly if more districts would include an extra dollar for the *Bulletin* at the time dues are collected.

A *Bulletin* chairman in each district should be appointed with care—only one who is interested and will work. At your business meetings the chairman should be asked for a progress report.

At the national convention in Chicago it was pointed out that all district presidents, officers, and committee chairmen were expected to be *Bulletin* subscribers. The *Bulletin* is our national magazine and, as officers in the A.M.A. auxiliary, we should be vitally interested in the national program. The *Bulletin* is an excellent source of information.

Bulletin subscriptions should be sent to the chairman. The chairman also has lists of present subscribers which each chairman should have.

Mrs. George H. Holt, Chairman

Report on the American Medical Education Foundation

We did not have a fund-raising project. Members are widely distributed geographically, making a state project difficult. Auxiliary members are involved in many community projects, so the method of raising funds was left to each district. To date $1,129.92 has been sent to the national office. This is a 72 per cent increase over last year. Six districts have yet to report. Money raising projects included the sale of playing cards, a smorgasbord, assessments, and district contributions.

Mrs. Stuart Cook, Chairman

Historian's Report

The fifteenth annual meeting of the Woman's Auxiliary to the North Dakota State Medical Association was held May 8, 1961, in the Community room of the Metropolitan Savings and Loan Building, Fargo, with Mrs. R. W. McLean, president, presiding.

Official minutes are recorded in the November issue of The Journal-Lancet. The convention program, minutes, and reports are filed in the archives.

The fall board meeting was held at 10 a.m. October 11 at The Ranch in Devils Lake, with Mrs. L. T. Longmire, state president, presiding, and 26 members present.

The thirty-eighth annual convention of the Woman's Auxiliary to the American Medical Association was held at Hotel Roosevelt, New York City, June 26 - 28. Mrs. Longmire and Mrs. Roger Berg of Bismarck were the delegates for North Dakota. Mrs. Berg's report was published in the October issue of *News, Views, and Cues.*

Mrs. Jansonius, president-elect, and Mrs. Longmire attended the fall conference in Chicago. Mrs. Jansonius's report was published in the October issue of *News, Views, and Cues.*

Guest speaker at the state convention was Dr. Carroll M. Lund, president of the North Dakota State Medical Association. He complimented the auxiliary on its fine support of the Student Loan Fund and AMEF. Mrs. C. Rodney Stoltz, Watertown, South Dakota, north central regional vice-president of the auxiliary to the American Medical Association, was an honored guest.

A September rally was held in Bismarck by the Health Career clubs of North Dakota. Arrangements were made by Mrs. R. Schoregge, Sixth District chairman for the Health Careers committee. She was assisted by Mrs. R. Hankins, advisor to the Medicorps of Mott and the North Dakota Council of Health Careers.

R. Pearl DeMoully Spielman, Historian

Program of the Woman's Auxiliary

SUNDAY, MAY 7, 1961

12:00 Noon. Registration, Gardner Hotel, Mrs. Marvin Geib, chairman.
1:00 p.m. Nominating committee meeting. Colonial Room, Gardner Hotel. Mrs. J. M. Van der Linde, chairman.
1:45 p.m. Finance committee meeting. Colonial room, Gardner Hotel. Mrs. E. J. Larson, chairman.
2:30 p.m. Student Loan Fund committee meeting. Colonial Room, Gardner Hotel. Mrs. J. A. Sandmeyer, chairman.
3:00 p.m. Preconvention board meeting. Mrs. R. W. McLean, president, presiding.
6:30 p.m. Informal mixer and buffet supper. Elks Club.

MONDAY, MAY 8, 1961

8:30 a.m. Past presidents' breakfast. Mrs. W. O. Webster, chairman.
9:00 a.m. Registration, Lobby, Gardner Hotel.
9:30 a.m. Opening session. Community room, Metropolitan Savings and Loan Building. Mrs. R. W. McLean, president, presiding.
Pledge of Loyalty: Led by Mrs. L. T. Longmire, president-elect.
Invocation: Mrs. J. W. Jansonius, first vice-president.
Welcome: Mrs. C. K. Fercho, Fargo.
Response: Mrs. Gale Richardson, Minot.
Greetings: Dr. C. M. Lund, president, North Dakota State Medical Association.
In Memoriam: Mrs. R. H. Waldschmidt, second vice-president.
Reports of state officers, chairmen, and district presidents.
12:30 p.m. Luncheon. Biltmore Motor Hotel. Mrs. E. O. Hieb, Seventh district president, chairman. Mrs. L. T. Longmire, state president-elect, presiding.
Address: Dr. E. H. Boerth, president-elect, North Dakota State Medical Association.
2:30 p.m. Second Business Session. Community room, Metropolitan Savings and Loan Building. Mrs. R. W. McLean, president, presiding.
Unfinished business, new business.
Election of officers.
6:30 p.m. Informal banquet. Top of the Mart, Frederick Martin Hotel, Moorhead. Mrs. L. G. Pray, chairman. Mrs. C. K. Fercho, first district president, presiding.
Honored guest and speaker: Mrs. C. Rodney Stoltz, regional vice-president of the auxiliary, Watertown, South Dakota.
Installation of officers.
Entertainment.

TUESDAY, MAY 9, 1961

10:00 a.m. Postconvention board meeting. Colonial room, Gardner Hotel. Transportation will be furnished for anyone requesting it.

CONVENTION CHAIRMEN

Mrs. B. A. Mazur, general chairman; Mrs. Charles Heilman, co-chairman; Mrs. Marvin Geib, registration; Mrs. H. A. Norum, transportation; Mrs. John Bond, hospitality; Mrs. R. J. Zauner, favors; Mrs. W. L. Macaulay, finance; Mrs. B. C. Corbus, publicity; Mrs. E. O. Hieb, luncheon; Mrs. L. G. Pray, banquet; Mrs. W. O. Webster, past presidents' breakfast; and Mrs. W. B. Armstrong and Mrs. G. A. Dodds, courtesy.

1961-62 Officers and Chairmen of Standing and Special Committees

STATE OFFICERS

President—Mrs. Thomas Longmire, 810 6th St., Devils Lake
President-elect—Mrs. J. W. Jansonius, 609 4th Ave. S.E., Jamestown
First vice-president—Mrs. Reuben H. Waldschmidt, 600 N. Washington, Bismarck
Second vice-president—Mrs. Robert Hankins, Mott
Recording secretary—Mrs. Clyde Smith, 622 Raymond Ave., Bismarck
Corresponding secretary—Mrs. J. H. Mahoney, 601 8th St., Devils Lake
Treasurer—Mrs. M. H. Poindexter, 1350 S. 9th St., Fargo

STATE COMMITTEE CHAIRMEN

Membership (Organization)—Mrs. J. W. Jansonius, 609 4th Ave. S.E., Jamestown
Program—Mrs. Reuben Waldschmidt, 600 N. Washington, Bismarck
Nominating—Mrs. R. W. McLean, Hillsboro
Parliamentarian—Mrs. T. Q. Benson, 1524 Walnut St., Grand Forks
Legislation—Mrs. L. G. Pray, 1701 S. 8th St., Fargo
Mental Health—Mrs. R. L. McFadden, 910 3rd Ave. N.W., Jamestown
Committee on Aging—Mrs. D. J. Halliday, Kenmare
Liaison to SAMA—Mrs. J. D. Cardy, 1110 Reeves Drive, Grand Forks
Civil Defense—Mrs. Kenneth Amstutz, 505 9th Ave. S.E., Minot
Bulletin—Mrs. George H. Holt, 214 2nd Ave. S.W., Minot
Historian—Mrs. Oliver DeMoulley, 1715 Avenue E, Bismarck
A.M.E.F.—Mrs. Stuart J. Cook, Rolette
Health Careers—Mrs. G. H. Heidorn, 1127 Valley View Drive, Minot
By-laws—Mrs. V. J. Fiscber, 303 8th Ave. S.E., Minot
Safety—Mrs. Gordon E. Ellis, 602 14th St. W., Williston
Community Service—Mrs. John C. Fawcett, 1125 5th St., Devils Lake
Publicity—Mrs. E. O. Hieb, 211 14th St., Devils Lake
Finance—Mrs. W. L. Macaulay, 1410 S. 9th St., Fargo, chairman; Mrs. M. H. Poindexter, 1350 S. 9th St., Fargo; Mrs. L. E. Wold, 1708 S. 9th St., Fargo; Mrs. W. P. Kieg, 501 17th Ave. S., Grand Forks; and Mrs. R. O. Hieb, 211 14th Ave. N.E., Jamestown

Student Loan Fund—Mrs. G. R. Richardson, 12 10th St. S.W., Minot, chairman; Mrs. J. M. Keller, 910 4th Ave. E., Williston; Mrs. R. D. Nierling, 415 9th St. S.E., Jamestown; Mrs. Ralph Leigh, 301 Park Ave., Grand Forks; and Mrs. Lee A. Christoferson, 1307 S. 6th St., Fargo

OFFICIAL PUBLICATIONS

News, Views, and Cues:

Business and circulation manager—Mrs. C. A. Arneson, 714 N. 2nd St., Bismarck; managing editor—Mrs. Robert Hankins, Mott; co-editor—Mrs. R. A. Vaaler, 1711 6th St. S.W., Minot

District Officers and Councillors

FIRST DISTRICT

President, Mrs. Robert Story, 1315 S. 9th St., Fargo; vice-president, Mrs. J. F. Houghton, 1707 S. 9th St., Fargo; secretary, Mrs. Mack V. Traynor, 1310 S. 9th St., Fargo; treasurer, Mrs. David Jahning, 823 N. 3rd St., Wahpeton; and councillor, Mrs. R. J. Zauner, 1414 S. 6th St., Fargo

SECOND DISTRICT

President, Mrs. G. H. Hilts, Cando; vice-president, secretary-treasurer, Mrs. D. G. McIntyre, Rugby; and councillor, Mrs. C. A. Corbett, 316 7th St., Devils Lake

THIRD DISTRICT

President, Mrs. James Leigh, 606 N. 3rd St., East Grand Forks, Minn.; vice-president, Mrs. Charles Porter, 1210 Chestnut, Grand Forks; secretary, Mrs. Rodney Clark, 511 18th Ave. S., Grand Forks; treasurer, Mrs. Robert Marshall, 137½ S. 3rd St., Grand Forks; and councillor, Mrs. R. C. Painter, 1121 Belmont Road, Grand Forks

FOURTH DISTRICT

President, Mrs. Raymond Vaaler, 1711 6th St. S.W., Minot; vice-president, Mrs. Kenneth Amstutz, 505 9th Ave. S.E., Minot; secretary, Mrs. J. S. McArdle, 222 Souris Drive, Minot; treasurer, Mrs. Ekrem Gozum, 1715 4th St. S.W., Minot; and councillor, Mrs. V. J. Fischer, 303 8th Ave. S.E., Minot

FIFTH DISTRICT

President, Mrs. W. R. Jensen, 521 4th Ave. N.W., Valley City; secretary-treasurer, Mrs. Clayton Jensen, 928 6th Ave. N.E., Valley City; councillor, Mrs. J. Goven, 912 6th Ave. N.E., Valley City; and reporter, Mrs. C. Klein, 117 3rd St. N.W., Valley City

SIXTH DISTRICT

President, Mrs. Roger Berg, 219 Ave. B West, Bismarck; vice-president, Mrs. M. A. K. Lommen, 831 Griffin St., Bismarck; secretary, Mrs. William Buckingham, 1803 N. 7th St., Bismarck; treasurer, Mrs. R. R. Kling, 1414 Hanaford Ave., Bismarck; and councillor, Mrs. M. M. Heffron, 320 Ave. B West, Bismarck

SEVENTH DISTRICT

President, Mrs. Clifford Hogan, 303 10tb Ave. N.E., Jamestown; vice-president, Mrs. S. Thakor, State Hospital, Jamestown; secretary-treasurer, Mrs. John Jestadt, 419 15th St. N.E., Jamestown; and councillor, Mrs. Robert McFadden, 910 3rd Ave. N.W., Jamestown.

EIGHTH DISTRICT

New officers will be elected in November for two years. President, Mrs. John R. Craven, 403 3rd Ave. E., Williston; vice-president, Mrs. J. J. Korwin, 701 1st Ave. E., Williston; and secretary-treasurer, Mrs. Dean Strinden, 1717 8th Ave. W., Williston; publicity, Mrs. Carrol Lund, 701 1st Ave. E, Williston; program, Mrs. Donald Skjei, 1224 4th Ave. E, Williston; and councillor and membership, Mrs. Joseph Craven, 915 West 2nd Ave., Williston

NINTH DISTRICT

President, Mrs. Norman Ordahl, N.W. of City, Dickinson; vice-president, Mrs. Walter Hanewald, Dickinson; and secretary-treasurer, Mrs. Donald Reichert, 1019 5th Ave. W., Dickinson

TENTH DISTRICT

President, Mrs. J. M. Little, Mayville; vice-president, Mrs. Russell Odegard, Hatton; secretary-treasurer, Mrs. R. C. Little, Mayville; and councillor, Mrs. Mervin Rosenberg, Northwood

SPECIAL COMMITTEES

Reading—Mrs. Kenneth Amstutz, 505 9th Ave. S.E., Minot, chairman; Mrs. Ekrem Gozum, 1715 4th St. S.W., Minot; Mrs. V. J. Fischer, 303 8th Ave. S.E., Minot; and Mrs. Samuel Shea, 808 1st St. S.E., Minot

Resolutions—Mrs. J. P. Merrett, 801 5th Ave. N.E., Valley City, chairman; and Mrs. W. R. Jensen, 521 4th Ave. N.W., Valley City

Nominations—Mrs. R. W. McLean, Hillsboro, chairman; Mrs. L. Henry Kermott, 200 7th Ave. S.E., Minot; Mrs. Ernest Larson, 321 2nd Ave. S.E., Jamestown; Mrs. M. M. Heffron, 320 Ave. B West, Bismarck; and Mrs. B. A. Mazur, 1237 N. 3rd St., Fargo

Alternates—Mrs. Charles A. Arneson, 714 2nd St., Bismarck; Mrs. S. C. Bacheller, Enderlin; Mrs. Edgar Haunz, 1029 Lincoln Drive, Grand Forks; Mrs. Robert Schoregge, 621 Ave. F West, Bismarck; and Mrs. J. H. Bond, 516 S. 13th St., Fargo

Delegates to national convention—Presidential, Mrs. Thomas Longmire, 810 6th St., Devils Lake; delegate, Mrs. Roger Berg, 219 Ave. B West, Bismarck; and alternate, Mrs. George Holt, 214 2nd Ave. S.W., Jamestown

Report of Mental Health Committee

In April I wrote to each district asking for reports on mental health and enclosed a brochure, "Community Action for Mental Health," noting Mental Health Week April 29 - May 5.

To date, I have heard from 4 of the 10 districts. The Ninth and Tenth Districts had no mental health program.

First District reported that cakes and cookies were furnished to the senior citizens teas given at the Fargo Y. W. C. A. bimonthly by members of the auxiliary.

Seventh District reported that at its February meeting Mr. Proule from the State Hospital discussed "Mental Health in Relation to the Family." An interesting question and answer period followed. Our annual State Hospital birthday party was held in February in cooperation with the dental wives. We plan to sponsor a senior citizens party during the coming year.

KATHERINE M. MCFADDEN, Chairman

Report of Health Careers Committee

First District advised counsellors of 4 area high schools in September that it would provide speakers and literature to interested groups. Representatives from various fields of medicine spoke at an October Career Day program. Committee members also spoke and arranged for speakers at several meetings of the Future Nurses Club.

Second District formed a Health Careers Club. Fourth District provided literature to all schools in the district, and to some in other districts through the Sisters of St. Francis School of Nursing and the Trinity Hospital School of Nursing. The Career Day in Minot, sponsored by the Kiwanis Club, covers almost all phases of medicine. Fifth District placed Health Careers material in the Senior High School library in Valley City.

Sixth District helped with a Health Careers rally in September, attended by 40 students from Jamestown, Mott, Dickinson, and Bismarck. The program included a tour of the Bismarck Hospital. The rally was sponsored by the North Dakota Council of Health Careers. Mrs. Schoregge represented our auxiliary at the council's January meeting. The council is composed of representatives from various health fields. The auxiliary contributed $25 toward the expense of sending 60 health kits to high schools. An exhibit is planned for a Career Night in May at Bismarck Junior College.

Seventh District had a successful year with its Future Nurses Club. Membership totals 21, with an average attendance of 15. Mrs. C. W. Hogan and Mrs. R. L. McFadden were advisors.

Programs included talks by the activities director at the State Hospital, a physiotherapist, anesthetist, pathologist, beautician, and fashion expert. Club members made 100 Christmas tray favors for the hospitals and worked on the local Cancer Drive. Eleven girls volunteered to help in the pediatrics ward at the Jamestown Hospital during the summer. Twelve girls attended a September state rally in Bismarck. Mrs. John Jestadt was chaperone. The year's program will close with a tea for the girls and their mothers. Future Nurses pins will be awarded.

Ninth District also had an active year with its Future Nurses Club. Meetings were held at least once a month. Programs were planned to highlight the work of nurses with college degrees, registered nurses, and practical nurses. Speakers included a physical therapist, public health nurse, registered laboratory technician, and dietitian. They discussed how future nurses can help in civil defense and mental health programs. A pin-awarding ceremony is scheduled in conjunction with the May graduation of licensed practical nurses. The auxiliary will serve refreshments.

The Tenth District has no special project because of its small and widely scattered membership. Third and Eight Districts did not report on their program.

Mrs. S. H. Heidorn, Chairman

Report of Community Service Committee

Community service rendered by the auxiliary in the various districts has been very gratifying. Each unit, regardless of size, has had a project, and has pursued and completed it to serve as a valuable asset to the community.

Smaller units, whose membership has restricted them to a limited number of projects, have directed their energies to church activities, PTA work, youth leadership, counseling for scouting, and activities of hospital auxiliaries.

Health Career and Future Nurses projects, through efforts of the district groups, have presented detailed and informative programs about careers in the field of medicine.

The first state rally was held in Bismarck with 40 in attendance. It is hoped it will serve as a stimulus to make next year's rally at Dickinson even better.

Sixth District had the pleasure of having Dorothy Stickney give her performance in "A Lovely Light" as a benefit to establish a Pioneer Doctor Exhibit in our state to honor her father, as well as other pioneer physicians.

Camp Sioux, a camp for diabetic children, again will be one of the projects of the Northwest District. Other units are working on civil defense projects with the assistance of medical, state, and national civil defense authority.

Individual members are high on the roster as counsellors, captains, and sponsors of local projects; in medical group activities; in state legislative work; and in the field of fine arts. Annual benefit dances, bridge parties, and food and rummage sales fill the year's calendar to assist the Student Loan Fund. The sale of cards helps the AMEF.

Clare E. Fawcett, Chairman

Report of District News Editor

Issues of *News, Views, and Cues* were in the mail during the months of October, December, February, and May. Most of the 10 districts contributed news for all issues. Our thanks go to the district councillors and reporters for their excellent cooperation in meeting deadlines.

News covered meetings and auxiliary projects, membership, community service, children, illness, deaths, travel, and miscellaneous subjects. We welcomed 11 new members, said farewell to 7, and informed of 2 moves within the state. We reported births of 12 girls and 9 boys. Outstanding achievements were acknowledged, and 5 weddings were reported. Some members took foreign trips or attended national and state meetings, so a number of interesting vacations were reported.

It was with interest that we heard about so many of our members. This made it possible for us to keep all members informed. Very little news was deleted. We would have welcomed more news for some issues.

Mrs. Ray Vaaler, news editor for the first 2 issues of *News, Views, and Cues,* moved from Minot to Phoenix, Arizona, shortly after January 1. Our best wishes went with her.

Elaine Sahl, Chairman

Report of "News, Views, and Cues" Editor

Four issues were printed and mailed to active members, editors of other state publications, the State Medical Association, and Blue Shield. Advertising covering the cost of mailing was procured this year for the first time. Blue Shield was most gracious in its support. Cost of printing was $55 for the 4-page issues and $75 for the 6-page December issue.

Each committee chairman was given the opportunity to send a report for publication. The reports from convention delegates, board meetings, greetings from the president, and the past-president's national report were included. A message from the State Medical Association president also was published. Other pertinent and timely information was given on legislation, the WHAM meeting, and the medical self-help program.

Coverage was given the convention in Chicago, AMEF, brochures available on homemakers service, and membership. The bi-state convention was well covered in the last issue and a reservation form included. An article on our national guest was included in this issue.

District news was compiled by its editor and forwarded for inclusion. It included reports from councillors on meetings and projects, community service, membership, children, and travel.

I would like to suggest again a three-year rotation for the staff of *News, Views, and Cues*: First year, business manager; second year, district news edtor; third year, editor. This would give continuity to the duties and give the new member of the staff a chance to observe publication. It would help in the event of resignations, and give an appointee a chance to break in more gradually. As an alternative suggestion, it might be possible to assign the publication staff to a district, alternating districts each year. The district assigned to publication for that year would be responsible for assigning a staff of 3 to carry out the duties involved. However, this district should *not* be the one from which the president comes, since that district gets involved in extra jobs the president needs to get done, and some of our small districts could not handle all the publication duties.

Mrs. R. E. Hankins, Chairman

Report on Medical Student Loan Fund

Eleven years ago the Sophomore Medical Student Loan Fund was initiated as a project by the North Dakota State Medical Auxiliary. This fund has grown to a value of $20,851.75 as of December 31, 1961. Each year this fund is utilized to a maximum. No interest is charged until graduation, and the rate then is 2½ per cent.

Income to the fund in 1961 totaled $9,016.77. This included repaid loans, interest, and the $2,447.37 contributed by our auxiliary.

Eighteen loans totaling $8,700 were made to students during 1961. These, plus the loans outstanding, left cash balance on hand of $316.77 as of December 31, 1961. This small balance is in keeping with the policy of utilizing the loan fund to near maximum. Another general policy is that the loans are made in $500 amounts, but when the fund is low, small loans are made.

It is a pleasure to report on the fine work of the various districts for this year in contributing to this loan fund:

First District (Fargo) 73 members (dinner dance)	$ 220.57
Second District (Devils Lake) 19 members (assessment)	76.00
Third District (Grand Forks) 64 members (dinner dance)	400.00
Fourth District (Northwest) 40 members (assessment)	390.00
Fifth District (Sheyenne Valley) 8 members (assessment)	15.00
Sixth District (Bismarck) 53 members (assessment)	560.00
Seventh District (Stutsman) 25 members (assessment)	250.00
Eighth District (Kotana) 19 members (assessment)	100.00
Ninth District (Southwest) 23 members (assessment)	50.00
Tenth District (Traill-Steele) 11 members (assessment)	15.00
North Dakota State Medical Auxiliary	100.00
Total members, 335; total contributions	$2,176.57

Average contribution per member: $6.49

A contribution of $570 was received in the form of memorial gifts in honor of the late Dr. R. H. Waldschmidt and the late Dr. Charles W. Schoregge of Bismarck. This makes a total of $2,746.57 for 1961-62 and increases the asset value of the Student Loan Fund to $23,598.32.

Mrs. Gale Richardson, Chairman

Report on the American Medical Education Foundation

We did not have a state-wide project to raise funds. Geographically, members are widely distributed, making a state project difficult. Auxiliary members also are involved in many community projects. The method of raising funds was left to each district. With 333 members in the state, a total of $1,049.92 was sent to the national office. One district, organized a little over a year, did not contribute. We received $765.92 from the other 9 auxiliaries, $209 from private donations as memorials, and $75 from the state auxiliary. Projects included sale of stationery and playing cards, a smorgasbord, and a Mardi Gras ball. They were aided by member assessments and district contributions.

Mrs. Stuart Cook, Chairman

Report on WASAMA Program

The auxiliary to the Student American Medical Association had a very successful year, with 25 members. We had 14 meetings which included touring the medical school, speakers on current events and literature, a program on socialized medicine, demonstrations on floral arranging, proper use of cosmetics, physical fitness, and a movie and lecture on first aid methods. We met either in private homes or at the university.

For our service projects we made tray favors for the hospitals in Grand Forks and sponsored a talk by Dr. Rodney Clark, gynecologist, for all women on campus.

Our money-making projects were 2 successful bake sales.

We sponsored 2 social events. One was an informal party in October as an "ice-breaker," with the theme, "The Life of a Medical Student." This party was so well received that there was demand for another. In March we had a formal dinner dance.

We had election of new officers in April and sent the incoming president, Barbara Skjonsby, to the national convention in Washington, D. C.

We met the evening of May 23, at the home of Dr. T. H. Harwood to honor Mrs. George Ward, whose entry in the national emblem design contest of WASAMA won first place.

Mrs. Ward's entry was among 12 submitted from WASAMA organizations in the United States. The design, which is the official WASAMA design, will be used on jewelry, stationery, and publications used by the association. The design consists of a caduceus, on an open book of knowledge, with intertwined wedding rings symbolizing the common goal of medical students and their wives. The words "Woman's Auxiliary to the Student American Medical Association" encircle the art.

A silver tray was presented to Mrs. Ward. The national organization will present her with a piece of jewelry engraved with the emblem. Originally from Philadelphia, Mrs. Ward has been an active member in the local WASAMA organization, serving this year on the program committee. She and Mr. Ward will live in Chicago, where he will be a student at Northwestern Medical School.

We concluded our year with a dinner meeting. Local auxiliary officers and our advisor, Mrs. Harwood, were guests.

Mrs. James Jarrett, President

Resolutions Report

1. *Be it resolved* that this convention of the Woman's Auxiliary to the North Dakota State Medical Association extend to Mrs. L. T. Longmire its sincere thanks and appreciation for the service which she has rendered to that group in the past year.

2. *Be it resolved* that the Woman's Auxiliary to the North Dakota State Medical Association express its appreciation and thanks to the city of Bismarck; to the Sixth District Medical Society; to Mrs. Robert Tudor and Mrs. Clyde Smith, convention co-chairmen; to managers and staffs of hotels and motels; to members of the press, radio, and television; to Mr. Lyle Limond and his staff; to Dr. Edwin H. Boerth, president of the North Dakota State Medical Association; to Dr. Leonard W. Larson, president of the American Medical Association; to Mrs. Stanley R. Truman, western region vice-president of the Woman's Auxiliary to the American Medical Association; to the South Dakota State Medical Society; to the Woman's Auxiliary to the South Dakota State Medical Society; and to all other persons and groups who have contributed to the success of the convention.

3. *Be it resolved* that the Woman's Auxiliary to the North Dakota State Medical Association express appreciation for the help and cooperation from all persons, organizations, and agencies who contributed to the success of its program during the past year.

Mrs. James H. Mahoney, Acting Chairman

Auxiliary President's Report—First District

The 79 members of the First District Medical Auxiliary had 4 luncheon meetings. Attendance was excellent, ranging from 46 to 63. Our first meeting in October was a planning session. We also toured the Rourke Art Gallery while James Rourke discussed the current showing. The January meeting was devoted to the forthcoming ball. At our March luncheon Dr. Donat discussed the new educational TV channel in Fargo. Mrs. Longmire was our honored guest and speaker in April.

Again this year our largest undertaking was our benefit ball, with a "Mardi Gras" theme developed by co-chairmen Patty Norum, Debbie Goltz, and Janet Jordheim. It helped us make our largest contributions to date: $350 to AMEF, and $150 to the Student Loan Fund. Publicity director Joyce DeCesare was most successful in obtaining spreads in the *Fargo Forum* and notices on TV and radio.

Busy committee chairmen included Dr. Jane Magill, who supervised the provisioning of the bi-weekly senior citizens meetings, with desserts donated by members. Nelda Lindsay and Helen Pray, local and state legislative heads, were instrumental in securing the film featuring Dr. Edward Annis, and arranging for a showing on Channel 6. They also brought stationery to a meeting and instructions to aid members in writing to congressmen to urge them to vote against the King-Anderson bill. A resolution was adopted by the group denouncing the same bill. Rita Traynor, Donna Kavanough, and Jane Magill of the Para-Medical Careers Committee distributed literature to the high schools, gave talks to Future Nurses clubs, worked with the Science Club, and showed films on health careers.

Auxiliary members continued to be very active in all phases of community life, including the two hospital auxiliaries, church, school, and women's groups.

Officers for this year were Jean Houghton, vice-president; Mattie Jaehning, treasurer; Rita Traynor, secretary, and Mona Zauner, councillor.

Mrs. R. D. Story, President

Auxiliary President's Report—Second District

The auxiliary to the Devils Lake District Medical Society held 9 meetings this year on the first Thursday of the month.

We have 19 paid members. We are proud to claim the state president, Mrs. Thomas Longmire, as a member. The state AMEF chairman, Mrs. Stuart Cook, is from our district, as is the state community service chairman, Mrs. John Fawcett. Mrs. James Mahoney is a faithful worker for *News, Views, and Cues*. Other local activities of our members include hospital auxiliaries, 4-H, park board, March of Dimes, and church group work.

Mrs. Longmire was our honor guest at the February meeting. A donation of $76 was sent to the Student Loan Fund. A Health Careers Club was organized in Devils Lake.

Mrs. G. H. Hilts, President

Auxiliary President's Report—Third District

This year the district had 4 dinner meetings at the Golden Hour Cafe. Because these meetings were held on the nights the doctors had their district meetings, attendance was extremely good. We were pleased that many of the wives of doctors from outside the city and from the Grand Forks Air Base took such an interest in joining our group.

Our guest at the first meeting was a hair stylist. Four members came with their hair in rollers and after dinner the beautician created new hair fashions.

Glenn Cunningham spoke and demonstrated the new trend in colors in interior decorating at our second meeting.

Our state president, Rosemary Longmire, spoke at our February meeting.

In March we had a spring style show, with several members of the auxiliary as models.

Operation WHAM was most successful. The Ronald Reagan record was well received at "Operation Coffee-cup," and at several church, PEO, bridge and PTA meetings. We have not received the film about socialized medicine, but arrangements have been made to run it on our local TV channel. The calling committee will notify all members when it will be shown so they can alert their friends. Helen Benson, legislative chairman, has done an excellent job on the WHAM project and has agreed to resume these duties for the next term.

Our big project of the year is always the Medical Student Loan Fund. The project committee outdid itself this year and had a most successful dinner dance, raising $400.

Mrs. James Leigh, President

Auxiliary President's Report—Fourth District

The Northwest District Medical Auxiliary held 3 meetings in the homes of members and 2 dinner meetings. The first meeting in October concerned civil defense. Mrs. Samuel Shea, chairman, arranged for Mr. Wayne Sanstead, a teacher at Minot Senior High School, to be guest speaker. He is a well informed proponent of civil defense and served in Army intelligence.

In December a joint meeting with the Northwest District Medical Society was held at the Minot Country Club. We were sorry to lose our president, Mrs. R. A. Vaaler, who moved to Arizona and could not finish her well-planned year.

Mrs. Thomas Longmire, state president, was honored guest at our January meeting. She was most gracious and helpful, giving us greater insight into our responsibilities concerning the legislation pending on the King-Anderson bill.

The March meeting had Mr. Bruce Van Sickle, a well known lawyer and former state representative, who spoke on "Wills and Estates."

The last meeting in April was a dinner at Gordon's Holiday Spot. The committee on legislation was in charge of the program, using materials from the WHAM packet. The playlet, "Don't Let It Happen Here," was presented.

There are 40 members and 2 honorary members in our auxiliary this year. The wives of the Air Force Hospital physicians continue to come to our meetings. Their help in our many community affairs is greatly appreciated.

Each member again contributed $10 to the Student Loan Fund, making a total of $390.

Mrs. M. W. Garrison, chairman for AMEF, was gratified when 39 boxes of playing cards were sold for that worthy cause.

In May, a rummage sale will raise funds for Camp Sioux, the summer camp for diabetic children near Grand Forks.

Members continue to be generous with their time and talents in the many community affairs in which they are interested. This is rewarding to each of us.

Mrs. Kenneth Amstutz, President

Auxiliary President's Report—Fifth District

In March we concluded the first year of affiliation in the state auxiliary.

We had 4 dinner meetings at Howard's Dinner Club.

Our 7 members have paid their dues and our secretary has sent them in.

We have supported the Student Loan Fund.

For a special project at Christmas we purchased a "Baby Tenda" and bed toys for the pediatric department of Mercy Hospital.

We have very much enjoyed being an organized club.

Mrs. Warren R. Jensen, President

Auxiliary President's Report—Sixth District

Our year started in September with a one-day convention for young people interested in health careers. We had some 50 in attendance from all parts of the state. Sessions were held at the State Capitol and at the Bismarck Hospital.

We had 4 meetings during the year. Our last one was a benefit luau, with members preparing the dishes. Our special guest was Mrs. Longmire, state president. Proceeds helped boost our year's contribution of $94.80 to AMEF. We donated $570 to the Student Loan Fund.

This district was in charge of the North Dakota–South Dakota state convention in Bismarck June 2-5.

Mrs. Roger N. Berg, President

Auxiliary President's Report—Seventh District

The Seventh District Medical Auxiliary has a membership of 25. Our year has been an enjoyable and rewarding one.

Our first meeting was in honor of Annabelle Arzt, first state president. Mrs. Longmire also was our honored guest and speaker.

The December meeting was devoted to the 2 needy families we care for at Christmas. Each member brings food, clothing, and gifts. This has been our annual project.

The March meeting was devoted to mental health. A member of the State Hospital staff spoke.

The April meeting highlighted WHAM. The Ronald Reagan record was played.

The Future Nurses Club, which we sponsor, has had a busy and interesting year. We gave a fall tea for the girls. The club has met twice a month. Each meeting includes a speaker, a tour, or a project. The girls made 100 Christmas tray favors for our hospitals, helped with the local cancer drive, and will do volunteer work in the pediatric ward of one of our hospitals as a summer project. We will finish the year with a tea, inviting mothers of the girls.

The auxiliary sponsors a birthday party once a year for the patients at the State Hospital. It also has volunteered to sponsor a party next year for the senior citizens group.

Our WHAM project has been well publicized by newspaper coverage and time on radio and TV.

We gave $48 to AMEF and $10 to the Student Loan Fund.

Louise Hogan, President

Auxiliary President's Report—Eighth District

We are a relatively inactive group in this district. Annually, $10 of our dues goes to the AMEF, and $100 to the Student Loan Fund.

All our members are busy in community service.

Two of our members have moved: Mrs. John Keller of Williston, and Mrs. Duane F. Pile of Crosby.

Mrs. Charles Petty, President

Auxiliary President's Report—Ninth District

Our October meeting was held at the home of Mrs. D. J. Reichert, following dinner at the Elk's Club. Mrs. Walter Hanewald reported on a meeting she and Mrs. Norman Ordahl had attended in Bismarck, regarding the June state meeting. The Bismarck group asked that we contribute about $15 for flowers and that we make favors for the luncheon. Mrs. Flo Hankins made a motion that we do this, Betty Larsen seconded, and the motion was passed. Mrs. Hankins reported on the state board meeting. The group agreed to send Grace Dukart a $50 memorial fund for the late Dr. Chris Dukart. Mrs. Hankins informed us that Dickinson will be host to a Health Careers rally in September 1962. Four or 5 girls will form the nucleus.

In December, we joined our husbands for a dinner at the Palm Beach Club in Dickinson.

The February meeting was a potluck dinner meeting at the home of Mrs. Norman B. Ordahl. Mrs. Gilliland made a motion, seconded by Mrs. Harlan Larsen, and carried, to give $50 to AMEF and $50 to the Student Loan Fund. Mrs. Walter Hanewald showed samples for favors for the state convention luncheon. It was decided to have a meeting in March to work on these favors.

Mrs. R. W. Rodgers, chairman of the nominating committee, presented the following names as officers for 1962-63: president, Mrs. W. C. Hanewald; vice-president, Mrs. Chris Dukart; and secretary-treasurer, Mrs. Henry Slominski.

A report was made on the Health Careers Club by Mrs. Hanewald, its advisor to the unit in Dickinson. She met twice a month with the group. At most meetings the girls had speakers who were active in various health careers. The group made favors for the hospital patients for various holidays. In the spring the auxiliary assists with the anual tea.

On April 14 the auxiliary met for a potluck dinner at the home of Mrs. Keith Foster. Mrs. Rosemary Longmire spoke. Mrs. Robert Hankins reported on WHAM.

We had 22 active members as of April 1.

Mrs. Norman B. Ordahl, President

Auxiliary President's Report—Tenth District

This district remained a social organization because of small membership and the great distance which separates members.

The Student Loan Fund and AMEF were supported by individual donations.

Mrs. J. M. Little, President

Convention Report

Luncheon was served at the Apple Creek Country Club June 4, with Mrs. E. A. Johnson, president-elect, South Dakota Auxiliary, and Mrs. J. W. Jansonius, president-elect, North Dakota Auxiliary, presiding. Table decorations were floral arrangements noting seventy-five years of medical service to North Dakota. Mrs. Roger Berg presented Mrs. J. W. Jansonius, who introduced the following persons at the head table: Mrs. Leonard Larson, Mrs. E. J. Larson, Mrs. L. T. Longmire, Mrs. R. Hankins, Mrs. R. Berg, Mrs. Tudor, and Mrs. Ordahl.

Mrs. E. A. Johnson brought greetings and presented the following South Dakota dignitaries: Mrs. Rodney Stoltz, Dr. MacDonald—who introduced auxiliary member Bill Wilson who, married to a physician, made convention history—Dr. Stoltz, Dr. and Mrs. Davidson, Mrs. Scheller, Mrs. Stanley R. Truman, western regional vice-president of the Woman's Auxiliary to the American Medical Association, our honored guest, and Dr. Truman.

Mrs. Jansonius introduced North Dakota's own Dr. Leonard Larson, president of the AMA, referring to him as "medical diplomat of North Dakota and the nation." Dr. Larson brought greetings from the AMA. He spoke of the prestige that goes with his position and the kindness and hospitality he and Mrs. Larson have received during his term of office. He said it had been a privilege to represent the physicians of the nation and that, unfortunately, it had become necessary to defend their positions. He urged members to interest themselves in politics, both as an obligation and as an opportunity to support the party of their choice. He said it is not a matter of party label but what a candidate stands for. He said doctors must continue to give good medical care regardless of the patient's ability to pay. He urged support of free enterprise and promotion of voluntary health insurance and the Kerr-Mills law. He predicted the King-Anderson bill would be defeated.

The meeting then was turned over to Mrs. Longmire, state president, who presented the AMEF certificates. Mrs. Erenfeld accepted for the Fourth District; Mrs. Hilts for the Second District; and Mrs. Christoferson for the First District.

Mrs. Jansonius introduced Mrs. P. G. Arzt, Jamestown, the first state president of the Woman's Auxiliary to the North Dakota State Medical Association, who carried the torch of the auxiliary sixteen years ago. A pin was presented and she was made an honorary member.

A style show followed, with clothes from Helen's Fashions. Mrs. Johnson was the commentator.

The second business session was opened at 2:30 P.M. at the Apple Creek Country Club, with Mrs. Longmire presiding. The district presidents' reports were made.

Motion was made for convention adjournment.

The closing banquet was held at the Bismarck Municipal Country Club. Decorations were carried out in a "Sweet Sixteen" theme. Mrs. Clifford Peters was at the organ. Mrs. Roger Berg presided.

Mrs. Alan Van Voorhis and Mrs. R. Olsen sang several duets. Mrs. J. R. Sakariassen was the accompanist.

Mrs. Stanley R. Truman, western region vice-president of the Woman's Auxiliary to the American Medical Association, chose as her topic "Stand Up and Speak." She said that when she thinks of the years she has spent in auxiliary work she thinks of *Hygeia*, now *Today's Health*, of the community service engaged in by auxiliary members, the scholarships on a county level, and the improving relationships between doctors' families. She said she feels auxiliary activities bring a closeness and deep friendship to members. She mentioned the hours of volunteer service, the raising of money for loans and scholarships, the Future Nurses clubs, and promotion of Health Career days as only a few of the activities engaged in by auxiliary members.

This year, emphasis has been on legislation, with "Operation Coffee Cup" proving successful and, over WHAM, emphasizing the importance of direct mail to Washington. She urged members to "stand up and speak." She asked them to help stem the tide of federal control, to exercise their right and privilege to write to Washington, and to urge others to write.

Mrs. Truman urged members to give to auxiliary projects. She said the national auxiliary asks each auxiliary member to take a position of leadership in a community program close to her heart. She discussed the work of the International Health Activities, or International Medical Assistance. This organization collects used medical books and medical equipment, clean material for bandages, and books of all types. It is under the direction of Mrs. Oberlin of Detroit, Michigan. Mrs. Truman asked support for this program.

The officers of North Dakota and South Dakota were installed, Mrs. Truman acting as installing officer. The North Dakota officers are: Mrs. J. W. Jansonius, president; Mrs. R. Hankins, president-elect; Mrs. C. Smith, first vice-president; Mrs. R. H. Waldschmidt, second vice-president; Mrs. R. L. McFadden, recording secretary; and Mrs. R. Berg, treasurer. The president's pin and gavel were presented to Mrs. Jansonius by Mrs. Longmire, and the past president's pin was given to Mrs. Longmire by Mrs. R. W. McLean. Gifts were presented to Mrs. Truman and Mrs. Jansonius. A standing ovation was given Mrs. Longmire for her work as president.

Convention was closed with a 10:30 A.M. brunch Tuesday, June 5, in the Hall of Four Seasons, Grand Pacific Hotel. Mrs. C. Rodney Stoltz, South Dakota, presided. We are all justly proud of Mrs. Stoltz, as she is to be elected president-elect of the national auxiliary.

KATHERINE MCFADDEN,
Recording Secretary, pro tem

Postconvention Board Meeting

Mrs. J. W. Jansonius called a postconvention board meeting to order immediately following the convention adjournment. She thanked Mrs. Longmire and her officers for their devotion to the auxiliary through the year. She announced that she would send the list of committee appointments to the board members for their initial approval and return. The theme for the year will be "Vigilance and Vision."

The following were elected to the nominating committee: Mrs. L. T. Longmire, chairman; Mrs. Charles Arneson, alternate; Mrs. John Van der Linde, Mrs. Mazur, alternate; Mrs. E. J. Larson, Mrs. Benson, alternate; Mrs. Schoregge, Mrs. Erenfeld, alternate; and Mrs. Christoferson.

Mrs. Hieb read the list of places, people, and organizations to be thanked for extending courtesies to the convention.

Motion was made for adjournment.

KATHERINE MCFADDEN,
Recording Secretary, pro tem

1962-63 Officers and Committee Chairmen

STATE OFFICERS
President—Mrs. J. W. Jansonius, 609 4th Ave. S.E., Jamestown
President-elect—Mrs. Robert Hankins, Mott
First vice-president—Mrs. Clyde Smith, 622 Raymond Ave., Bismarck
Second vice-president—Mrs. Reuben Waldschmidt, 600 N. Washington, Bismarck
Recording secretary—Mrs. R. L. McFadden, 910 3rd Ave. N.W., Jamestown
Corresponding secretary—Mrs. C. W. Hogan, 303 10th Ave. N.E., Jamestown
Treasurer—Mrs. Roger Berg, 219 Ave. B West, Bismarck

COMMITTEE CHAIRMEN
Membership—Mrs. Robert Hankins, Mott
Program—Mrs. Clyde Smith, 622 Raymond Ave., Bismarck
Nominating—Mrs. Thomas Longmire, 810 6th St., Devils Lake
Parliamentarian—Mrs. E. J. Larson, 321 2nd Ave. S.E., Jamestown
Committee on Aging—Mrs. D. J. Halliday, Kenmare
Liaison to SAMA—Mrs. T. H. Harwood, 2704 Belmont Rd., Grand Forks
Bulletin—Mrs. George H. Holt, 214 2nd Ave. S.W., Jamestown
Historian—Mrs. George Spielman, 1815 Ave. E., Bismarck
AMEF—Mrs. E. T. Keller, Rugby
Health Careers—Mrs. Walter Hanewald, R.R. 1, Box 18, Dickinson
By-laws—Mrs. V. J. Fischer, 303 8th Ave. S.E., Minot
Community service—Mrs. M. M. Heffron, 320 Ave. B West, Bismarck
Publicity—Mrs. M. A. K. Lommen, 831 Griffin St., Bismarck
Safety—Mrs. D. N. Mergens, Hillsboro
Civil Defense—Mrs. Richard Zauner, 1414 S. 6th St., Fargo
Official Publication—*News, Views, and Cues*

Managing editor—Mrs. J. H. Mahoney, 601 8th St., Devils Lake; co-editor—Mrs. Jens Sahl, 310 9th St. N.W., Minot

Mental health—Mrs. R. D. Schoregge, 621 Ave. F West, Bismarck

Legislation—Mrs. Moses, 1111 W. Highland Acres Road, Bismarck

SPECIAL COMMITTEES

Reading—Mrs. J. M. Van der Linde and Mrs. R. D. Nierling, Jamestown

Resolutions chairman to be chosen later

Nominations—Mrs. Thomas Longmire, chairman; Mrs. J. M. Van der Linde, Isabel Mazur, Mrs. T. Q. Benson, and Mrs. F. R. Erenfeld; alternates: Gladys Arneson, Mrs. E. J. Larson, Mrs. R. D. Schoregge, and Mrs. Lee Christoferson

Finance—Mrs. Roger Berg, chairman; Mrs. E. O. Hieb, 211 14th Ave. Drive N.E., Jamestown; Mrs. Henry Kermott, 200 7th Ave. S.E., Minot; Mrs. J. A. Sandmeyer, 1005 Lanark, Grand Forks, and Mrs. C. K. Fercho, 1747 S. 7th St., Fargo

Student Loan—Mrs. G. R. Richardson, 12 19th St. S.W., Minot, chairman; Mrs. R. D. Nierling, 415 9th St. S.E., Jamestown; Mrs. Ralph Leigh, 301 Park Ave., Grand Forks; Mrs. Lee A. Christoferson, 1307 S. 6th St., Fargo; Mrs. R. O. Goehl, 1015 Reeves Drive, Grand Forks; and Mrs. M. H. Poindexter, 1350 S. 9th St., Fargo

District Presidents—1962-63

First District—Mrs. James F. Houghton, 1701 S. 9th St., Fargo
Second District—Mrs. Wm. Fox, 320 E. 9th, Rugby
Third District—Mrs. Rodney Clark, 511 18th Ave. S., Grand Forks
Fourth District—Mrs. Kenneth Amstutz, 505 9th Ave. S.E., Minot
Fifth District—Mrs. W. R. Jensen, 521 4th Ave. N.W., Valley City
Sixth District—Mrs. M. A. K. Lommen, 831 Griffin St., Bismarck
Seventh District—Mrs. John Jestadt, 419 N.E. 15th, Jamestown
Eighth District—Mrs. Charles Petty, 209 E. 14th, Williston
Ninth District—Mrs. Walter C. Hanewald, R.R. 1, Box 18, Dickinson
Tenth District—Mrs. D. N. Mergens, Hillsboro

District Councillors—1962-63

First District—Mrs. R. J. Zauner, 1414 S. 6th St., Fargo
Second District—Mrs. C. A. Corbett, 316 7th St., Devils Lake
Third District—Mrs. R. C. Painter, 1121 Belmont Road, Grand Forks
Fourth District—Mrs. V. J. Fischer, 303 8th Ave. S.E., Minot
Fifth District—Mrs. J. Goven, 912 6th Ave. N.W., Valley City
Sixth District—Mrs. M. M. Heffron, 320 Ave. B West, Bismarck
Seventh District—Mrs. J. M. Van der Linde, 1016 4th Ave. N.E., Jamestown
Eighth District—Mrs. Joseph Craven, 915 2nd Ave. W., Williston
Ninth District—Mrs. Richard Raasch, 30 W. 8th St., Dickinson
Tenth District—Mrs. R. W. McLean, Hillsboro

WOMAN'S AUXILIARY TO THE NORTH DAKOTA STATE MEDICAL ASSOCIATION

1962 MEMBERSHIP ROSTER

First District

Bacheller, Mrs. Stephen C.	Enderlin
Barnard, Mrs. Donald M.	1212 S. 7th St., Fargo
Beithon, Mrs. E. J.	429 N. 5th St., Wahpeton
Bond, Mrs. John H.	516 S. 13th St., Fargo
Borland, Mrs. V. G.	1514 S. 9th St., Fargo
Burton, Mrs. P. H.	415 S. 8th St., Fargo
Christu, Mrs. Chris N.	1509 S. 5th Ave., Fargo
Christoferson, Mrs. Lee A.	1307 S. 6th St., Fargo
Corbus, Mrs. Budd C.	1257 N. 4th St., Fargo
Darrow, Mrs. Kent E.	716 S. 8th St., Fargo
DeCesare, Mrs. F. A.	1401 S. 9th St., Fargo
Dillard, Mrs. James R.	620 S. 8th St., Fargo
Dodds, Mrs. G. Alfred	1602 S. 10th St., Fargo
Fercho, Mrs. Calvin K.	1747 S. 7th St., Fargo
Fortin, Mrs. H. J.	1440 S. 8th St., Fargo
Geib, Mrs. Marvin J.	1219 S. 4th Ave., Moorhead, Minn.
Gillam, Mrs. John S.	1433 S. 7th St., Fargo
Goff, Mrs. John R.	1441 S. 8th St., Fargo
Goltz, Mrs. Neill F.	804 S. 8th St., Fargo
Gustafson, Mrs. Maynard B.	1410 S. 5th St., Fargo
Hall, Mrs. G. Howard	1748 S. 9th St., Fargo
Hamilton, Mrs. T. M.	River Oaks, Moorhead, Minn.
Hanna, Mrs. J. F.	907 S. 12th Ave., Fargo
Hawn, Mrs. Hugh W.	1325 N. 1st St., Fargo
Hager, Mrs. Jerome P.	Box 70, Hankinson
Heilman, Mrs. Charles O.	49 - 18th Ave. N., Fargo
Houghton, Mrs. James F.	1707 S. 9th St., Fargo
Hunter, Mrs. Cornelius M.	1434 S. 6th St., Fargo
Ivers, Mrs. George U.	1106 S. 10th St., Fargo
Ivers, Mrs. R. R.	809 S. 8th St., Fargo
Jaehning, Mrs. David G.	823 N. 3rd St., Wahpeton
James, Mrs. J. B.	1145 N. 10th St., Fargo
Kavanough, Mrs. G. J.	1201 S. 6th St., Fargo
Kelly, Mrs. William	313 Black Bldg., Fargo
Kohlmeyer, Mrs. Albert	1720 S. 3rd St., Moorhead, Minn.
Lancaster, Mrs. W. E. G.	1332 N. 5th St., Fargo
Larson, Mrs. G. Arthur	1538 S. 9th St., Fargo
Lawrence, Mrs. Donald H.	720 N. 7th St., Fargo
LeBien, Mrs. Wayne E.	1353 N. 5th St., Fargo
LeMar, Mrs. John D.	1324 N. 5th St., Fargo
Lewis, Mrs. T. H.	1502 S. 6th St., Fargo
Lindsay, Mrs. Douglas T.	1505 S. 11th St., Fargo
Long, Mrs. W. H.	1438 S. 8th St., Fargo
Lytle, Mrs. F. T.	1306 N. 1st St., Fargo
Macaulay, Mrs. Warren L.	1410 S. 9th St., Fargo
Magill, Mrs. Gordon B.	1312 S. 7th St., Fargo
Murray, Mrs. James B.	1206 15½ Ave. S., Fargo
Melton, Mrs. Frank M.	1702 S. 7th St., Fargo
Mazur, Mrs. Bernard A.	1237 N. 3rd St., Fargo
Magness, Mrs. John W.	1711 S. 6th St., Fargo
Norum, Mrs. H. A.	801 South Drive, Fargo
Owens, Mrs. W. F.	1845 18th St., Fargo
Pianka, Mrs. Wallace A.	Veterans Hospital, Fargo
Poindexter, Mrs. Marlin H.	1350 S. 9th St., Fargo
Pray, Mrs. Lawrence G.	1701 S. 8th St., Fargo
Rogers, Mrs. R. G.	1621 S. 7th St., Fargo
Schneider, Mrs. Joseph F.	1002 S. 13th St., Moorhead, Minn.
Sedlak, Mrs. O. A.	1019 S. 9th St., Fargo
Sessumus, Mrs. John J., Jr.	1330 S. 18th Ave., Fargo
Shook, Mrs. Lester D.	1755 S. 10th St., Fargo
Stafne, Mrs. William A.	1409 S. 9th St., Fargo
Story, Mrs. Robert D.	1315 S. 9th St., Fargo
Thompson, Mrs. George R.	421 S. 14th St., Fargo
Traynor, Mrs. Mack	807 Broadway, Fargo
Triggs, Mrs. Perry O.	1401 S. 12th St., Fargo
Ulmer, Mrs. Robert	714 S. 19th Ave., Fargo
Varco, Mrs. B. W.	701 N. 29th Ave., Fargo
Webster, Mrs. William	801 Park Drive, Fargo
Weible, Mrs. Ralph D.	1628 S. 9th St., Fargo
Weible, Mrs. R. E.	1630 S. 9th St., Fargo
Wenz, Mrs. E. P.	1702 S. 13th St., Fargo
Weyers, Mrs. H. J.	1414 S. 6th St., Fargo
Williams, Mrs. Neil S.	1707 S. 13th St., Fargo
Wold, Mrs. L. E.	1708 S. 9th St., Fargo
Zauner, Mrs. Richard J.	1414 S. 6th St., Fargo

Second District

Toomey, Mrs. Glen W.	Devils Lake
Terlecki, Mrs. Jaroslaw	Minnewaukan
Sawchuk, Mrs. John	Rolette
Pine, Mrs. Louis Fabian	817 - 7th St., Devils Lake
Palmer, Mrs. Dolson W.	Cando
McIntyre, Mrs. Donald G.	126 W. 11th St., Rugby
McBane, Mrs. Robert D.	1106 - 4th St., Devils Lake
Mahoney, Mrs. James H.	601 - 8th St., Fargo
Longmire, Mrs. Lemuel T.	810 - 6th St., Devils Lake
Lazareck, Mrs. Isadore L.	1032 - 5th St., Devils Lake
Keller, Mrs. Emil T.	816 - 2nd Ave. S.W., Rugby
Johnson, Mrs. Christian G.	819 W. 3rd Ave., Rugby
Hilts, Mrs. George H.	Cando
Fox, Mrs. William R.	320 E. 9th St., Rugby
Fawcett, Mrs. Robert M.	12th Ave., Devils Lake
Fawcett, Mrs. John C.	1125 - 5th St., Devils Lake
Eylands, Mrs. Jon V.	710 W. 3rd St., Rugby
Corbett, Mrs. Connor A.	316 - 7th St., Devils Lake
Cook, Mrs. Stuart J.	Rolette

Third District

Benson, Mrs. T. Q.	1524 Walnut, Grand Forks
Campbell, Mrs. D.	1007 Chestnut, Grand Forks
Clark, Mrs. R. G.	511 - 18th Ave., S., Grand Forks
Clayburgh, Mrs. B. J.	729 Reeves Drive, Grand Forks
Coultrip, Mrs. R. L.	Box 87, McVille
Countryman, Mrs. George L.	923 Kittson, Grafton
Culmer, Mrs. A. E., Jr.	101 Reeves Court, Grand Forks
Dailey, Mrs. W. C.	1812 Belmont Road, Grand Forks
DeLano, Mrs. Robert	Northwood
Doss, Mrs. D. R.	9 E. Conklin Ave., Grand Forks
Evans, Mrs. Harold	1024 Reeves Drive, Grand Forks
Frey, Mrs. W. W.	Drayton
Fritzell, Mrs. K. E.	1120 Cottonwood, Grand Forks
Gertson, Mrs. G. D.	511 S. 5th St., Grand Forks
Goehl, Mrs. R. O.	1015 Reeves Drive, Grand Forks
Graham, Mrs. Charles	923 Almonte, Grand Forks
Graham, Mrs. J. H.	1125 Reeves Drive, Grand Forks
Grinnell, Mrs. E. L.	1207 Lincoln Drive, Grand Forks
Harwood, Mrs. T. H.	2704 Belmont Road, Grand Forks
Haugen, Mrs. C. O.	Box 436, Larimore
Haunz, Mrs. Edgar A.	1029 Lincoln Drive, Grand Forks
Helenbolt, Mrs. K. S.	2216 S. 10th, Grand Forks
Helgeson, Mrs. Norman	Cavalier
Helm, Mrs. Richard	1527 Chestnut Place, Grand Forks
Jensen, Mrs. August F.	1721 Belmont Road, Grand Forks
Kana, Mrs. Dale C.	Grafton
Keig, Mrs. Wm. P.	501 - 17th Ave. S., Grand Forks
Krahn, Mrs. H. C.	Walhalla
Landry, Mrs. L. H.	Walhalla
Larson, Mrs. E. John	Cavalier
Liebeler, Mrs. Frances P.	520 - 17th Ave. S., Grand Forks
Leigh, Mrs. James A.	606 N. 3rd, E. Grand Forks
Leigh, Mrs. Ralph E.	301 Park Ave., Grand Forks
Leigh, Mrs. Richard H.	1117 Lincoln Drive, Grand Forks
Levine, Mrs. L.	1006 Cottonwood, Grand Forks
Lorentson, Mrs. Carl	1716 Oak St., Grand Forks
McLeod, Mrs. John	911 N. 22nd St., Grand Forks
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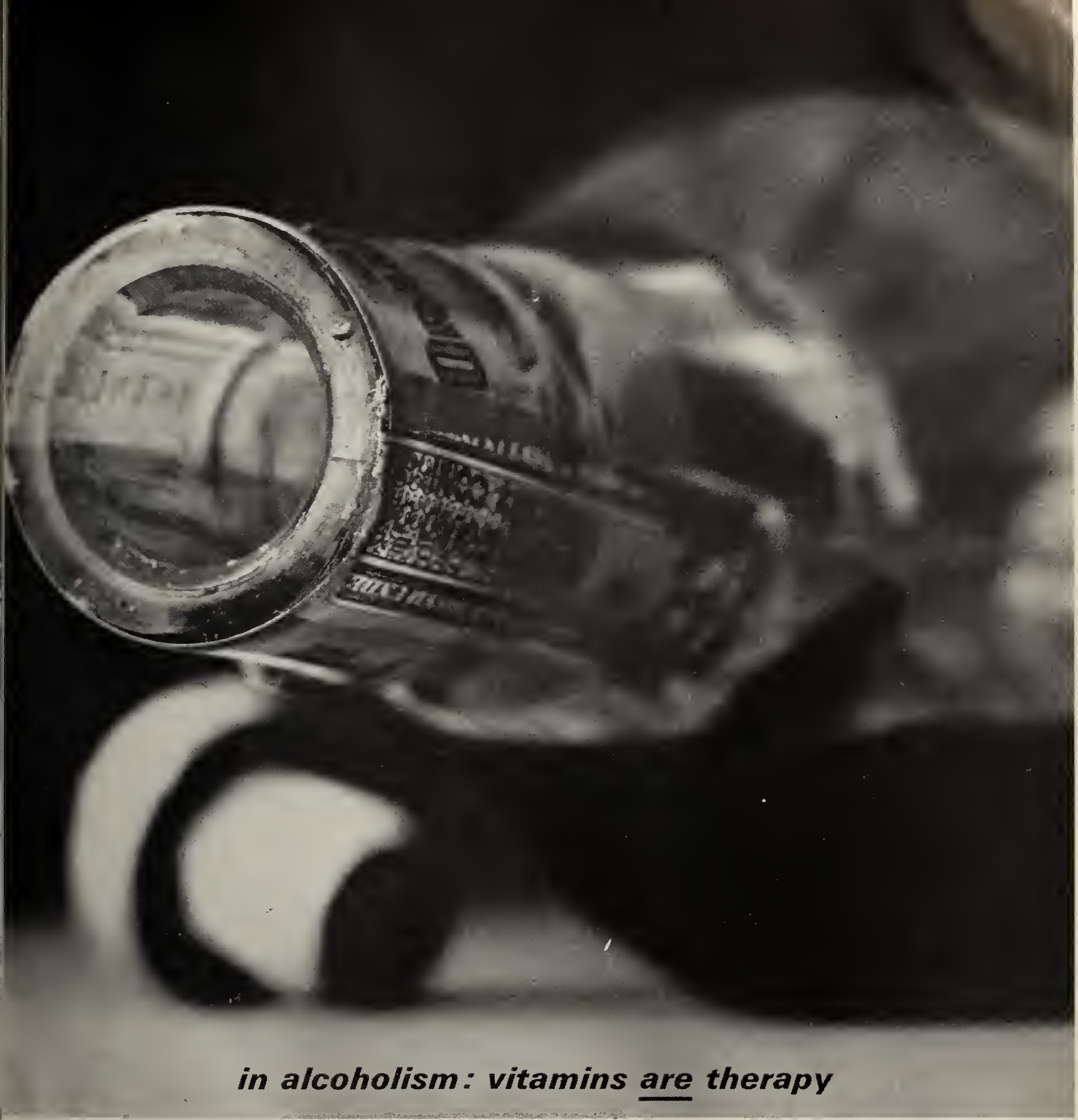
A. C. Hymes and R. P. Doe: Adrenal function in cancer of the lung, with and without Cushing's syndrome. Am. J. Med. 33:398-407, 1962.

Meckel's diverticulum usually is an incidental finding during operation for some other condition but should be considered if no other cause of intra-abdominal disease is apparent. The defect may cause hemorrhage, inflammation, intestinal obstruction, or intussusception and may present as neoplasm, omphalomesenteric fistula, or a component of hernia. Excision is indicated for symptomatic lesions. If the bowel is nonviable, intestinal resection and diverticulectomy are done and the intestine is rejoined by end-to-end anastomosis. If the defect is malignant, intestinal resection, with excision of lymphatic drainage pathways, is performed. Some wide-mouthed diverticula, incidental to other intra-abdominal disease, do not have to be removed.

E. C. Weinstein, J. C. Cain, and W. H. ReMine: Meckel's diverticulum: 55 years of clinical and surgical experience. J.A.M.A. 182:251-253, 1962.



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Book Reviews . . .

Anaesthesia for the Injured

L. J. WOLFSON, M.D., *1962. Philadelphia: F. A. Davis Co. 110 pages. Illustrated. $4.00.*

This should prove to be a useful book for its contents are not limited to information on anesthesia. The author writes from considerable experience which he translates into practical terms for the reader. The management of minor and major injuries is presented in concise sentences. Detailed and valuable therapeutic suggestions are prevalent. The reviewer was pleased to note that Dr. Wolfson repeatedly stresses the fact that most severely injured patients are inadequately transfused. He also points out the often forgotten fact that movement of a poorly resuscitated victim may be followed by catastrophic hypotension. The discussion of caring for the surgical patient with a full stomach is well thought out, although in this country tracheal intubation with the patient awake is better regarded than by the author. He gives an intelligent, simplified analysis of how to evaluate and treat blood loss. Burns, abdominal and thoracic injuries, and the problems associated with trauma to the head and face are well presented.

The monograph is easily read and is the type of book which a student or practitioner could cover at one sitting. Its details can then be referred to as emergencies develop.

The reviewer continues to be intrigued with the role of vasodilator substances in the management of trauma. Dr. Wolfson presents his belief on this subject in an interesting fashion, although one suspects that if he had experience with drugs other than chlorpromazine his convictions might have been firmer.

ROBERT D. DRIPPS, M.D.
Philadelphia

Urology in Medical Practice

FRANK C. HAMM, M.D., *and* SIDNEY R. WEINBERG, M.D., *second edition, 1962. Philadelphia: J. B. Lippincott. 323 pages. Illustrated. $9.75.*

The authors state in the preface that their aim is to introduce medical students and residents to urology and to provide ready references for those in other branches of medicine and surgery.

In carrying out this plan, the authors have included chapters on each of the following subjects: urologic terminology, history taking and physical examinations, use of the laboratory, instrumental examination, the principles of roentgen diagnosis, urologic examinations in infancy and childhood, the identification of urologic disease in the presence of abdominal symptoms, applied anatomy and physiology of the kidney (this includes discussions of acute and chronic renal failure as well as of electrolyte balance), anomalies of the kidney, infections of the kidney together with a brief discussion of

(Continued on page 18A)

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(Continued from page 17A)

the use of antibacterial agents, urogenital tuberculosis, renal calculi, renal neoplasm, renal trauma, and vascular disease and a chapter each on diseases of the ureter, bladder, prostate gland and seminal vesicles, penis and urethra, testicles, and adrenal glands.

The authors have achieved their announced objectives. The book is well written, easily read, and competently and profusely illustrated (277 illustrations). It does not go into any details of surgical technic or postoperative care, and, consequently, postoperative complications are not covered. While one can easily quarrel with the order in which subjects have been presented, some of the authors' views (although they say that controversial material has been avoided), and the quality of reproduction of some of the roentgenograms, these are matters of personal taste. For instance, in acute renal failure, the reviewer feels that 750 cc. are too much fluid to replace insensible loss; also, some antibiotics do not accumulate in the body. The book is recommended to the groups mentioned in the preface.

MILTON P. REISER, M.D.
Minneapolis

The Nature of Psychotherapy

WALTER BROMBERG, M.D., *1962. New York City: Grune & Stratton. 108 pages. $4.50.*

As the name states, this valuable monograph studies the fundamental nature of psychotherapy. It successfully attempts to penetrate beyond the content of therapy or the postulates of a given school and into the mechanisms and logic of the relationship which exists in psychotherapy. Its comprehension of psychotherapy as a body of knowledge is thorough and sound. To the amateur its grasp of classical and modern philosophy is impressively erudite, without being showy. It is a scholarly work.

What is the book about? To simplify, let us imagine 2 men, A and B, who meet by agreement at a given time and place. A is afflicted and seeks relief. B is a highly trained specialist, the proud member of a profession clearly identified as such by himself, his peers, and the community at large. Sometimes B talks and A listens; sometimes A talks and B listens. Mainly, words pass between them, but other kinds of signals, noted or not, occur.

There are other dimensions. B, the therapist, has certain implied expectations. He has a commitment to develop and preserve craftsmanship in what he does. He has a commitment to be a healer. He operates on the basis of a rationale which can explain the development of A's suffering and can specify the technical measures which will alleviate it. Unfortunately for science, the theories are self-proving and not subject to external validation by ordinary scientific means. Furthermore, B is committed to a presupposition of causality: the concept that A's afflictions do indeed have a "cause" and that the events whereby A's afflictions are gradually or suddenly relieved also have a "cause," namely, the technics of B. By the rules of the transaction, A is bound to concur.

Bromberg maintains that this basic logic applies regardless of the specific school or theory held by B. Thus if B_1 is freudian, B_2 is jungian; the basic logic of the A–B relationship is the same. In fact, in a quiet tour de force Bromberg successfully applies this model to medieval times, where A is the sufferer afflicted by witchcraft, B is the priest trained in the specialty, and the therapy content of the A–B relationship is the technic of exorcism.

The ultimate problem of psychotherapy as a science and a craft nowadays is that the entire structure rests on the ex-

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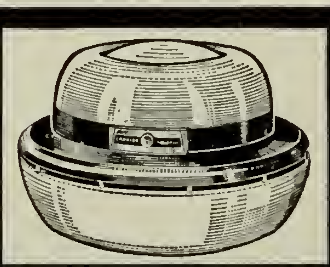

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pectations and postulates of B, the therapist. The theory and possibly the reward, also, are his. Exergies go into the controversies and contents of Theory B_1 vs. Theory B_2 vs. Theory B_3, and so forth. History notes the flow and ebb of the respective theories. The basic relationship (—) in the A–B duality has been studied less and then, typically, in B's terms. Thus, it is always more natural to put the therapist first ("the doctor–patient relationship"). We have lost sight of the one element in common to all therapy—the patient.

Therapy as experienced and formulated by the patient in his own terms has not been adequately analyzed. (A corollary to this at the social level is that public mental health programs have typically been based on postulates defined by mental health professions and not necessarily on public needs defined by society.) Bromberg proposes research to examine the philosophy of therapy as viewed by the patient.

Generally, one is reminded of the definition of psychotherapy given by the late Robert Fawcett: "Psychotherapy is an arrangement whereby two people agree to come together for a period of time in the hope that at the end of that time, one or the other or both will feel better."

This book is an important contribution. Although short, it is complex, compact, and delivered with a deceptively easy discipline. It is hard reading—not in virtue of style but in virtue of its subtle and paradoxical subject. It will be disturbing, but it is a must for psychotherapists. Because of its technical nature, it is of limited use to the general physician.

DAVID J. VAIL, M.D.
St. Paul

Hypothermia in Surgical Practice

K. E. COOPER *and* D. N. ROSS, *1962. Philadelphia: F. A. Davis Co. 116 pages. Illustrated. $4.50.*

This short, concise volume is a well-conceived effort to summarize all the known information concerning the theory and practice of hypothermia in medical and surgical practice. As such, it should prove extremely valuable to the anesthesiologist and to the thoracic and neurosurgeon, as well as to those students and residents who may be interested in hypothermia.

The beginning chapters deal with the physiologic response to hypothermia and summarize a great deal of significant information. Subsequent chapters relate to the specialized pharmacology of drugs employed in hypothermic technics and deal with the metabolic problems associated with total body hypothermia.

The remainder of the book consists of sections describing, in detail, various technics of achieving, maintaining, and operating under hypothermia in cardiovascular and neurosurgery. Later chapters deal with specialized hypothermic technics for a single organ or other selected regions. In addition, there is a short chapter concerning the effects and treatment of unintentional hypothermia.

There is an excellent bibliography at the end of the book, which is quite valuable to the more interested student. Illustrations are few, but they are well chosen and appropriate. The book appears to be worthwhile for those interested in the specialized technic described.

EUGENE F. BERNSTEIN, M.D.
Minneapolis

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News Briefs . . .

General

THE STAFF OF THE MAYO CLINIC and Faculty of the Mayo Foundation for Medical Education and Research will present Clinical Reviews in March. The program will be similar to those held in Rochester for many years. It will consist of lectures and discussions on problems of current interest in general medicine and surgery. Those attending will be eligible for twenty-five hours of Category I credit from the American Academy of General Practice and the College of General Practice of Canada. Identical sessions will be offered March 11 through 13 and March 18 through 20. Doctors may indicate which session they prefer by writing to M. G. Brataas, Mayo Clinic, Rochester.

° ° ° °

THE SECOND OF 2 booklets to be used for prescription of fat-controlled diets is available from the Minnesota Heart Association. The diets are of moderate, rather than low, fat content, but a substantial amount of the fats are in poly-unsaturated vegetable oils. The latest booklet, "Planning Fat-Controlled Meals for Unrestricted Calories," is intended to help patients reduce cholesterol values without necessarily reducing weight. The first booklet, "Planning Fat-Controlled Meals for 1200 and 1800 Calories," is primarily for overweight patients. The booklets offer sample menus, foods to eat and avoid, dishes using vegetable oils, and advice about shopping for groceries and eating out. The booklets were prepared jointly by the American Heart Association, American Dietetic Association, and United States Public Health Service. Further information may be requested from the Minnesota Heart Association at 1821 University Avenue, St. Paul 4, Minnesota.

North Dakota

DR. HUBERT A. CARBONE has been appointed a clinical director and the director of training, education, and development at the North Dakota State Mental Hospital, Jamestown. He was a former clinical director and director of training and research at the Mental Health Institute, Cherokee, Iowa. Before accepting the Iowa post, he was chief of psychiatry at the Veterans Administration Hospital, Sepulveda, California, and was clinical instructor at the University of California, Los Angeles.

° ° ° °

DR. ERNST SCHMIDHOFER has been reappointed to a second two-year term as superintendent of the North Dakota State Mental Hospital, Jamestown, to begin July 1 when his present term expires. Dr. Schmidhofer is a graduate of the University of Illinois College of Medicine, Chicago.

° ° ° °

DR. R. E. WIEDERANDERS has joined Drs. Gordon E. Ellis, Chester C. Borrud, and Dean R. Strinden at the Harmon Park Clinic in Williston, North Dakota. Dr. Wiederanders is a graduate of the University of Illinois College of Medicine, Chicago, with surgical training at Vanderbilt University, Nashville. He has been engaged in research with the Veterans Administration in Omaha for the past two years.

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Minnesota

DR. JAMES T. PRIESTLEY, head of a section of surgery at the Mayo Clinic, Rochester, has been reelected chairman of the Board of Governors. Dr. L. Emmerson Ward, consultant in medicine at the clinic, has been elected vice-chairman, succeeding Dr. C. Allen Good. J. W. Harwick, a member of the administrative section, has been reelected secretary. Dr. Good and Dr. Howard B. Burchell, consultant in medicine, have retired from the board. Replacing them are Dr. Donald W. Mulder, a neurology consultant, and Dr. William G. Sauer, a consultant in medicine. Other members of the board are Dr. J. M. Stickney, consultant in medicine; Dr. James W. DuShane, head of a section of pediatrics; Dr. C. W. Mayo; Dr. O. H. Beahrs, head of a section of surgery; Dr. C. F. Code, head of the section of physiology; and G. S. Schuster, head of the administrative section.

* * * *

DR. C. H. HODGSON of the Mayo Clinic, Rochester, has been elected president of the Zumbro Valley Medical Society. He succeeds Dr. Alvin B. Hayles. Other officers are Dr. E. W. Johnson, Jr., vice-president; Dr. Grant R. Diessner, secretary-treasurer; and Dr. R. E. Fricke, executive secretary.

* * * *

DR. ANDERSON C. HILDING, Duluth physician and research scientist, has been elected first vice-president of the American Academy of Ophthalmology and Otolaryngology. Dr. William L. Benedict of Rochester was reelected executive secretary and treasurer.

* * * *

DR. L. O. UNDERDAHL, head of a section of medicine, has assumed the presidency of the staff of the Mayo Clinic, Rochester. Dr. D. C. Campbell was chosen president-elect. Other officers elected were Dr. P. R. Lipscomb, vice-president; Dr. C. B. Holman, secretary; and Drs. B. E. Douglass and D. C. Utz, councilors. Confirmed as members of the Board of Governors of the Mayo Clinic were Drs. W. G. Sauer and D. W. Mulder.

* * * *

DR. MALCOLM A. MCCANNEL of Minneapolis is serving on the medical and teaching staff of the SS Hope in Peru. The hospital ship is in Peru to bring modern medical instruction to doctors and health officials. Dr. McCannel, an ophthalmologist, was previously with the SS Hope in Indonesia.

* * * *

DR. PHILIP HENCH of the Mayo Clinic in Rochester received a medical research award at a City of Hope medical center dinner in Chicago. Dr. Hench was co-winner of a 1950 Nobel prize for the discovery and development of cortisone.

* * * *

DR. TERRELL F. YEAGER of Minneapolis has joined the Mork Clinic in Anoka. Dr. Yeager is a graduate of the Stritch School of Medicine of Loyola University, Chicago. He interned at St. Joseph Hospital in Chicago and received training in obstetrics and gynecology at St. Mary's Hospital, Minneapolis. The other staff members of the clinic are Drs. Frank E. Mork, A. Harold Mork, Matthew D. Yelle, and Herman D. Bentz.

* * * *

DR. ROBERT G. CARLSON, surgeon, has joined the Lakeland Medical Center in Willmar. Dr. Carlson was graduated

(Continued on page 22A)

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NEWS BRIEFS

(Continued from page 21A)

from the University of Minnesota Medical School in 1954 and interned at the University of Oregon. He received specialty training in general surgery at the Wayne County Hospital, Detroit. Before this, he practiced general medicine in Wadena and then served with the Air Force.

* * * *

DR. ROBERT PFEILER of Lincoln, Nebraska, has been appointed assistant director of medical services, Minnesota Department of Pubilc Welfare. The post was last held in 1960 by Dr. David J. Vail before he became director. Dr. Pfeiler is a graduate of the University of Nebraska College of Medicine, Omaha, with psychiatric training at the Meninger School of Psychiatry, Topeka. He previously was chief of the outpatient clinic at Travis Air Force Base, California. Dr. Pfeiler will have over-all responsibility for aiding in the operation of Minnesota's expanding network of regional mental health clinics.

* * * *

DR. DONALD H. PETERSON has left St. Olaf College, Northfield, to begin a practice of general medicine, surgery, and obstetrics in Northfield. He is located in the office of Dr. J. Gordon Beaton. Dr. Peterson was director of the health service and hospital at St. Olaf for fifteen years. He was graduated from the University of Minnesota Medical School in 1944 and received intern and resident training at the West Suburban Hospital, Oak Park, Illinois.

* * * *

DR. VERNON KUHLMANN, Alexandria surgeon since 1959, has joined the Alexandria Clinic. Dr. Kuhlmann, a native of Hamburg, Minnesota, received his medical degree from the University of Minnesota Medical School in 1954. He interned at Minneapolis General Hospital and then became a resident in surgery at Abbott Hospital. He served in the Navy as staff surgeon at the United States Naval Hospital, Jacksonville, Florida, before coming to Alexandria.

* * * *

DR. RUSSELL A. THOMPSON has moved to Willmar to join Dr. Stanley S. Chunn in eye, ear, nose, and throat practice. Dr. Thompson was graduated from the University of Minnesota Medical School in 1955, completed his internship in Duluth, and practiced in Cosmos until 1959, when he returned to Minneapolis for specialty training.

* * * *

DR. LOUIS A. BRUNSTING of the Mayo Clinic, Rochester, has been reelected a director of the American Board of Dermatology, Inc. He has been a director since 1958 as a representative of the American Academy of Dermatology.

* * * *

DR. CLARENCE V. BATEMAN of Breckenridge has accepted an appointment to the Fergus Falls State Hospital. After graduating from Northwestern University Medical School, Dr. Bateman practiced in Chicago and then moved to Mountain Lake. He began practice in Wahpeton in 1931 and has been associated with the Breckenridge Clinic since 1956.

* * * *

DR. CLARENCE M. VIRTUE, a pediatrician, has joined the Interstate Clinic in Red Wing. Dr. Virtue is a graduate of the University of Rochester School of Medicine, New York. He completed training in pediatrics at Duke University, Durham, North Carolina, and practiced most recently at Eureka, California, where he was on the staff

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of St. Joseph Hospital and General Hospital. He also was consultant in pediatrics at Eureka's Humboldt County Community Hospital, Redwood Memorial Hospital, and Trinity Hospital.

* * * *

DR. HENRY E. MICHELSON, professor emeritus of dermatology at the University of Minnesota, is one of the first two recipients of an American Academy of Dermatology gold medal award for outstanding contribution to the science of dermatology. The new award, presented to individuals meriting special recognition in dermatology, was given to Dr. Michelson and Dr. Stephen Rothman of the University of Chicago at the academy's annual meeting in Chicago.

* * * *

DR. O. THERON CLAGETT, head of a section of general surgery at the Mayo Clinic, Rochester, and professor of surgery in the Mayo Foundation, University of Minnesota, has been elected an honorary member by the Society of Thoracic Surgeons of Great Britain and Ireland at its annual meeting in England.

* * * *

DR. ROBERT R. KIERLAND, head of the Section of Dermatology at the Mayo Clinic, Rochester, has been elected president of the American Academy of Dermatology at its annual meeting in Chicago. Dr. Kierland has been secretary of the academy for the past five years.

South Dakota

DR. VILIS A. ZANDERSONS has begun practice at the Whiting Memorial Clinic in Woonsocket. Dr. Zandersons has practiced previously at Sioux Falls and Herried. He is a graduate of Latvijas Universitate Medicinas Fakultate, Riga, Latvia.

* * * *

DR. JAMES MONFORE, a recent graduate of the University of Minnesota Medical School, has begun practice in Winner. Dr. Monfore interned at the Pierce County Hospital, Tacoma, Washington, and received three months of surgical training at the Sacred Heart Hospital, Yankton.

Deaths . . .

DR. RUDOLPH L. CROOK, 70, associated with the Arrowhead Clinic, Duluth, since 1952, died December 14. He came to Duluth after spending thirty years in China with the foreign missions department of the United Baptist Christian Church. He studied at the School of Tropical Medicine, London, before going to China, where he was engaged in malaria control. Dr. Crook also served in Malaya for the Far Eastern Bureau of the League of Nations. He was a graduate of the University of Minnesota Medical School.

* * * *

DR. WLADYSLAW JAY-JEDRZEJEWSKI, 42, a member of the medical staff at the Glenwood Hills Hospital, Golden Valley, since 1958, died December 19 in the crash of a Polish Airlines Viscount at Warsaw International Airport. A native of Przystajn, Poland, Dr. Jedrzejewski received his medical degree in Erlangen, Germany, and

(Continued on page 24A)

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NEWS BRIEFS

(Continued from page 23A)

came to the United States in 1956. He was an intern at St. Luke's Hospital in St. Paul for two years. He received nationwide attention in 1961 when he used a borrowed pocket knife to open the chest of an electrocution victim and massaged the man's heart to restore circulation. An accomplished pianist, Dr. Jedrzejewski once appeared as a soloist with the Warsaw Symphony Orchestra.

* * * *

DR. WILLIAM H. BODENSTAB, 92, an early associate of Bismarck's Quain and Ramstad Clinic, died November 21. Dr. Bodenstab was graduated from the Jefferson Medical College of Philadelphia in 1893. Following two years of practice in Milwaukee, Wisconsin, he moved to New Salem in 1898 and later to Bismarck. In 1903 he was president of the North Dakota Medical Association.

* * * *

DR. ALLOYS H. TALLAKSON, 40, a former Duluth physician, died December 4 in Phoenix, where he had been in private practice for twelve years. Dr. Tallakson, a graduate of the University of Minnesota Medical School, was vice-president of the Arizona Academy of General Practice.

* * * *

DR. ROY LINDE, 88, physician in Ellendale, North Dakota, since 1905, died November 26 in Memorial Hospital. He was a native of Plano, Illinois, and a graduate of the University of Minnesota Medical School. In April, 1961, he was the "Most Unforgettable Character" subject in the *Reader's Digest*.

* * * *

DR. IVOR DAHLIN, 65, died in Aurora, Minnesota, on November 28. He was graduated from the University of Minnesota Medical School in 1922 and interned at St. Mary's Hospital in Duluth. Dr. Dahlin came to Aurora in 1927 and practiced there until his retirement in 1956.

* * * *

DR. IRVING A. PREINE, 77, of Osseo, Minnesota, died December 14. Dr. Preine, a graduate of the University of Minnesota Medical School, practiced in Minneapolis for forty-two years. He was a former chief of the medical staff at St. Andrew's Hospital in Minneapolis.

* * * *

DR. WILLARD R. PECK, 51, died in St. Paul on December 7. He was a partner with Associated Anesthesiologists in St. Paul for ten years. Dr. Peck was graduated from the University of Nebraska College of Medicine, Omaha, in 1941.

* * * *

DR. LESLIE O. DART, 94, who practiced in Minneapolis from 1899 to 1947, died November 22. He was graduated from the University of Minnesota Medical School in 1901. Dr. Dart had a deep interest in ornithology as well as in medicine. He assisted the late Dr. Thomas S. Roberts with the field work and photography for his study, "The Birds of Minnesota."

* * * *

DR. WILBURN O. B. NELSON, 54, a staff member of the St. Peter, Minnesota, State Hospital, died December 2. A native of Superior, Wisconsin, and a graduate of the University of Minnesota Medical School, he was an internist at the Fergus Falls Clinic from 1937 to 1957. After a year in Bisbee, Arizona, he came to St. Peter in 1959. He was Fergus Falls Health Officer from 1942 to 1957 and vice-president of the Minnesota Sanitary Conference in 1950.

COMING *in* *April*

Articles and features to be found in the next issue of THE JOURNAL-LANCET

Today, inhalation therapy is concerned very largely with the administration of oxygen alone or supplemented by the use of medication. Actually, the therapy is closely associated with anesthesia and the development of general anesthesia, in particular, according to John S. Lundy, Chicago, editor of the Section on Pain and Distress of THE JOURNAL-LANCET.

The importance of adequate inhalation by the patient has not been sufficiently emphasized and as a consequence is overlooked, Dr. Lundy writes.

In his opinion, definite regulations concerning the practice of inhalation therapy eventually will have to be promulgated by some authority, just as similar regulations are needed now in the field of general anesthesia.

Two additional papers in the Section on Pain and Distress, a quarterly feature, will be:

- **Searching for the Cause of Obscure Pain and Finding It,** by Bayard T. Horton, Rochester, Minnesota.
- **The Pharmacology of Pain Control,** by Hugh S. Mathewson, Kansas City, Missouri.

Other articles to appear in the April issue are:

- **Hypertrophic Pulmonary Osteoarthropathy and Clubbing,** by John F. Lancaster, Columbus.
- **Genitourinary Injuries,** by Clyde E. Blackard, Minneapolis.
- **Paralytic Brachial Neuritis,** by Harold W. Evans, Grand Forks.
- **Whipple's Disease: Report of a Case Cured,** by George H. Spurbeck and Michael F. Koszalka, Fargo.
- **Seasonal Variation in Aberrant Group Behavior,** by Rubel J. Lucero, Byron W. Brown, and Howard R. Davis, Minneapolis and St. Paul.

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Allergic Problems of the Upper Respiratory System

EKREM GOZUM, M.D., and JOHN J. AYASH, M.D.
Minot, North Dakota

ALLERGIC DISEASES form one of the largest groups of chronic disorders. It is estimated that approximately 10 per cent of the population of the United States is subject to some form of allergy.[1] Allergy of the upper respiratory tract is the most commonly seen type of allergic disorders.

The purpose of this paper is to present a brief review of allergy of the upper respiratory system and its medical and surgical treatment.

The nose is usually the first involved because of its anatomic location. Nasal allergy is primarily produced by inhalant allergens, although food sensitivity may produce a moderate degree of nasal symptoms. Nasal allergy may be divided into 3 distinct forms: (1) hay fever (pollinosis); (2) allergic rhinitis (perennial rhinitis); and (3) vasomotor rhinitis.

Hay fever is caused by wind-borne pollen. It occurs from April to mid-September. There are 3 types which occur in various seasons in different parts of the country. These are spring hay fever caused by tree pollens, which usually starts in March or April and continues through June; summer hay fever produced by grass pollens, which starts in May or June and may continue through July; and autumnal hay fever which is primarily caused by ragweed pollen and starts in August and continues until the middle of September.

In evaluation of the pollen allergy, a knowledge of the biologic life in the region is an important guide for diagnosis and treatment.[2]

Perennial rhinitis is caused by various inhalant allergens such as house dust, furniture dust, grain mill dust, animal dander, and so forth. The vasomotor rhinitis is defined by Goldman and Tintera[3] as a symptom of hypoadrenocorticism, which will not be discussed here.

DIAGNOSIS

Hay fever is easily diagnosed by the history, since the yearly occurrence of the symptoms is very characteristic of this disease. Clinical symptoms are watery nasal discharge and excessive lacrimation. Anterior rhinoscopy usually reveals edematous nasal mucosa, and the turbinates are also pale and edematous. Nasal smears usually show a large amount of eosinophils.[4] Skin tests are very reliable for pollen, but they are less reliable for inhalant and food allergens. A positive skin test may reveal a past, present, or future allergy for the pollen. Also, the degree of the reaction may not indicate the severity of the allergy. In perennial rhinitis, itching is minimal; otherwise, the symptoms are quite similar to hay fever.

EKREM GOZUM *and* JOHN J. AYASH *are with the Minot Eye, Ear, Nose and Throat Clinic, Minot.*

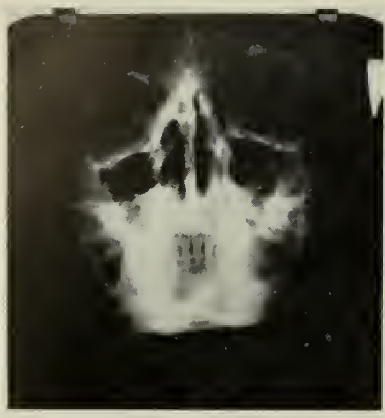


Fig. 1.
Normal paranasal sinuses

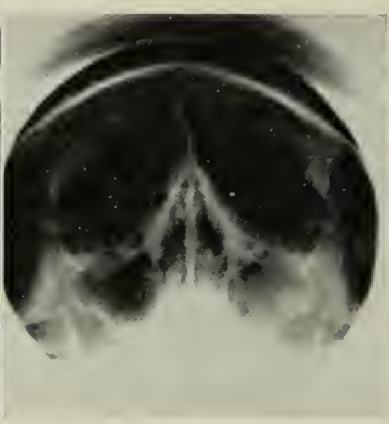


Fig. 2. Marked thickening of the maxillary sinus mucosa

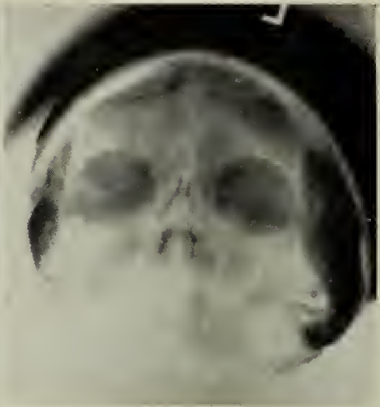


Fig. 3. Bilateral maxillary sinusitis due to mixed etiology

In differential diagnosis, rhinitis due to endocrine disorders (hypothyroidism) and rhinitis medicamentosa must be considered. The complications of hay fever are bronchial asthma and nasal polyposis. Complications of perennial rhinitis include a nasal polyposis, paranasal sinus disease, and middle ear disease. Nasal polyps usually originate from the anterior ethmoid sinuses. Paranasal sinuses are infected in the majority of the cases. The mucosa of the paranasal sinuses reacts to allergen in a manner similar to the nasal mucosa. Roentgenograms may reveal various degrees of thickening (figures 1, 2, and 3) or polypoid degeneration or sinusitis (figure 4). Polyps originating from the maxillary sinuses may produce choanal polyps by passing through the natural ostium and falling into the nasopharynx (figure 5).

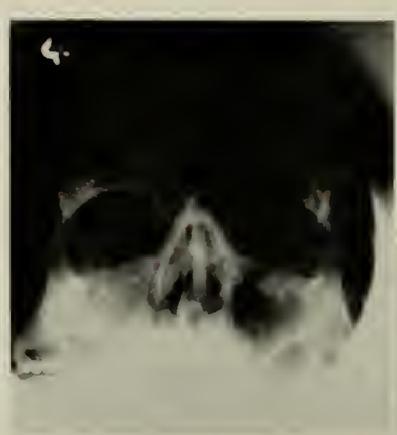
The role of allergy has been pointed out by several authors.[4–7] In middle ear disturbances, the dysfunction of the eustachian tube is caused by edema and hypertrophied lymphoid tissue around the eustachian tubes or enlarged retropharyngeal nodes, which are manifestations of an underlying allergic disorder.

THERAPY

The most important aspect of treatment is the elimination of the offending allergens. This can be achieved to a certain degree by air conditioning or by electronic dust removers; pollen-free climates are certainly ideal for severe cases. Elimination of offending inhalants, such as feather pillows, wool blankets, or toys, should also be attempted. If this is not successful, desensitization must be carried out.

In desensitization for hay fever, 3 methods are used. The most important method is the preseasonal therapy which is started two or three months before the pollen season. Injections are started with a high dilution and the dosage is gradually increased. During the pollen season, the dosage is cut down because of the amount of pollen present in the atmosphere. Injections are given weekly or twice weekly. In perennial therapy, the dosage of the injection is increased

Fig. 4. Unilateral involvement of the paranasal sinuses. Right maxillary, frontal, and ethmoid sinuses are involved.



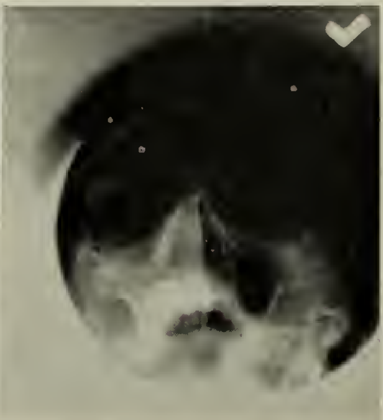


Fig. 5. Right maxillary sinusitis and choanal polyp originating from the same sinus

TABLE 1

Type of operation		*Patients, no.*	*Previous surgery*	*Bronchial asthma*	*Nasal smear for eosinophils*			*Pathologic diagnosis*	
					1+	*2+*	*3+*	*Chronic infected polyp*	*Benign polyp*
Nasal polypectomy and partial ethmoidectomy		46	10	5	5	7	3	35	3
Caldwell-Luc	Unilateral	27			4	2	3	27	
	Bilateral	7		3	2	1		6	
Caldwell-Luc and nasal polypectomy, ethmoidectomy		6					2	6	
Choanal polypectomy		3					3		3
Antral window	Unilateral	3							
	Bilateral	5							
Fronto-ethmoidectomy		4							
Total		101							

after the pollen season and the interval between the injections is extended to once every two weeks or longer until the next season. If the patient is seen during the hay fever season, coseasonal therapy is instituted by using a lower dosage. The value of this last method is rather limited. The perennial rhinitis desensitization must be carried on all year around. We prefer the method suggested by Hansel[8] in which a high dilution therapy is started first and then the amount is gradually increased until the optimal dosage is reached. The benefit of this method is that it prevents generalized reactions and the dosage can be adjusted according to the patient's response. Satisfactory results are obtained in 80 per cent of the hay fever cases.[9]

Besides desensitization, general allergic treatment must be carried on. The carbohydrate intake is cut down and more proteins are included in the diet. Steroids may be used if necessary. The complications of the allergy should be treated following the allergic management of the patient. Nasal polyps should be removed if they produce nasal obstruction; small polyps may not necessitate surgical treatment. Before a nasal polypectomy is done, paranasal sinuses should be evaluated, especially the ethmoid sinuses, for usually a low-grade infection of the ethmoid sinuses is present. Maxillary sinus pathology of allergic etiology may respond to antiallergic and antibiotic medication when they are given at the same time. Irrigation of the maxillary sinus is the next approach for unresponsive cases. If the sinusitis does not improve with the conservative methods, then an antral window or Caldwell-Luc operation is necessary. Serous otitis media (secretory otitis) is the most common middle ear complication caused by allergy. Mild cases with a hearing loss up to 20 decibels respond to antihistaminic drugs or antiallergic treatment in approximately 50 per cent of the cases. If the serous otitis recurs in a short time or a residual hearing loss exists in spite of allergic treatment (table 2), a

TABLE 2

Type of operation	*Patients, no.*	*Hearing improvement after surgery*						*Hearing improvement with antiallergic treatment before surgery*				
		10db.	*15db.*	*20db.*	*25db.*	*30db.*	*40db.*	*10db.*	*15db.*	*20db.*	*25db.*	*30db.*
Tonsillectomy and adenoidectomy and bilateral myringotomy	117	6	21	24	3	18		3	6	4		
Adenoidectomy and bilateral myringotomy	105		4	9	3	15	3			4		3
Removal of lymphoid tissue bilateral myringotomy	48		6	3	15	3	3		4	5		
Tonsillectomy and adenoidectomy	180	10	4						3			
Adenoidectomy	28	4	2	3								
Tonsillectomy	20											
Total	498											

complete adenoidectomy with myringotomy is indicated. If the tonsils are infected, they should be removed. In children with hay fever, it is very important that the surgery be done during the pollen-free season. If the child is an asthmatic and if the physician is convinced that the chronic infection of the tonsils aggravates the symptoms, tonsillectomy should be performed. Radium applicators are of minor importance in the treatment of middle ear complications; in fact, they should be avoided. Roentgen rays may be used in cases refractory to all other kinds of treatment.

MATERIAL

During the last three years, 101 patients with paranasal sinus disease of allergic etiology were seen. Patients with nasal polyps without ethmoid sinus involvement are not included in this series. Ethmoid sinuses were found to be involved in the majority, 48 per cent, and maxillary sinuses in 35 per cent of the cases. No abnormal sphenoid sinus pathology was seen. Histologic reports revealed infected polyps in most cases, in spite of allergic etiology (table 1).

Intranasal exenteration of the ethmoid cells was done in the presence of ethmoid sinus involvement. In most instances, the ethmoid cells were filled with infected polypoid degeneration.

An antral window operation was done in mild cases of maxillary sinusitis. Since the mucosa was diseased in most of the cases, a Caldwell-Luc procedure was the method chosen in most instances (27 cases). In 3 cases, choanal polyps were present and a Caldwell-Luc operation was required for complete extirpation of the diseased tissue (figure 5). Tonsillectomy and adenoidectomy were performed on 498 patients for various indications. Of the total cases, 55 per cent had abnormal middle ear pathology. Routine audiometric studies were done on children 4 years old or older before surgery. Some of them showed slight improvement with antihistamines (table 2). A total of 117 patients required tonsillectomy and myringotomy, which produced an average hearing improvement of 22 decibels through the speech range (512 to 4096 cycle frequency range). Adenoidectomy with myringotomy was done in 105 cases, with an average improvement of 21 decibels. Hearing loss was the initial complaint in 48 cases. Secondary removal of the lymphoid tissue and a myringotomy was carried on with a hearing improvement of 18 decibels.

Three years after operation, secondary serous otitis had developed in only 6 patients. Of these, 2 responded to antihistaminic drugs, 2 required a myringotomy, and 2 patients had had a cleft palate repair previously and were treated with x-rays. Untreated secretory otitis may develop ankylosis of the ossicular chain. Stapes surgery was required in 2 cases because of this.

CONCLUSION

In the treatment of the allergy of the upper respiratory tract, the complications of the allergic reactions should not be overlooked. When bronchial asthma is present, the paranasal sinus pathology should be investigated in cases refractory to treatment. Allergy should be considered first in children with middle ear complications. Repeated audiometric studies should be done for evaluation of therapy. A complete adenoidectomy with myringotomy is always necessary in cases not responding to the antiallergic management.

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The Individuality of Children: The Physician's Role

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WEBSTER'S unabridged dictionary defines the noun, individuality, in several ways. One definition given is that it is a "character or property peculiar to an individual" or "that quality which distinguishes one person from another." The individualist is defined in two ways: as "one who thinks independently or individually" and as "one who practices egoism." Several definitions are also given for the noun, individualism. It is said to be that doctrine, theory, or policy practiced by persons possessing an individuality. This doctrine holds "that the chief end of society is the promotion of individual welfare and that the chief end of moral law is the development of individual character." Individualism is also stated to mean that "society exists for the sake of its individual members." Further, from the standpoint of ethics, another definition is given. This is "a conception that all values, rights, and duties originate in individuals and that the community or social whole has no value or ethical significance not derived from its constituent individuals."

In this attempt to interpret the meaning of these words, perhaps we may be able to define a little more clearly one impact of medical science and its members, the physicians, on our children today. This may help us to define the nature of the opportunity available to medical science and its pupils to contribute more effectively to the welfare of children in the future.

The individuality of children has been the major theme of all the White House Conferences on Children. In fact, a brief historical review will reveal that concern for the individuality of children has been prevalent through each of the White House Conference discussions since 1909. Many of the recommendations made at these meetings carried specific phrases which emphasized the need for attention to the individuality of children.

HISTORICAL REVIEW

During the first White House Conference, in 1909, it was stated that uniformity, conformity, and regimentation were likely to mark the nature of an institutional environment or foundling home for children and were, therefore, poor soil upon which individual potentials could grow. Hence, foster homes, adoption agencies, and welfare programs for dependent children were initiated. The second conference reviewed this concept, with the purpose of establishing better standards of operation for the rapidly developing programs. These standards supported the importance of the individual needs of mothers and children, not only of dependent children but all children. Thus, it was logical to place much emphasis on parent education, which was felt to be a keystone for the application of knowledge concerning the prevention of diseases and problems in children. It was stated that, through parent education, prevention of disease and other problems in children demanded consideration of the "individual characteristics of each family and each child."

In 1930, the same theme evolved from many of the discussions. Each phase of discussion contained a plea to all who contribute to the welfare of the child—teacher, parent, minister, physician, welfare worker, and others—to consider the child as a total individual and stated that the effective application of all these values in the culture of the child required attention to all the attributes of the growing child. From a medical standpoint, attention to individuality of a physical nature was also expressed at this conference by the presentation and the establishment of many physical growth and development standards.

To some extent, the intellectual, emotional, and environmental attributes of our children

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were also discussed. These reports were particularly valuable to medical science. The information was widely disseminated in the medical literature of that day. It was put to practical use by the medical profession. It became standard textbook information for all medical students and physicians concerned with growing children. This conference helped to identify the field of pediatrics as a major teaching discipline in medical schools. It helped medicine for children to come of age and have equal importance, from a teaching and research standpoint, to medicine for adults.

Again, in the 1940 conference, the theme "to equip children for the successful practice of democracy" indicated that the basic process by which this democratic functioning could occur resided in the nature of interpersonal relationships which existed within the family and the community. It was further pointed out that the success of this process was dependent upon the ability of its members to recognize and respect the individuality of those about them.

We see the word again in the 1950 conference. It was pointed out that it was the responsibility of a democracy "to produce socially minded, cooperative people without sacrificing the individuality." While emphasis on growth and development of children from a physical standpoint was the expression in the earlier conferences, we now see added emphasis on another phase of individuality of children, namely, the emotional and mental development. From this conference there arose a more clearly defined need to further study the broad problem of mental health. The importance of understanding more fully the processes of emotional development and growth was fundamental to the objectives of the theme established at that conference—"to build up those inner resources of character which are the main strength of the American people."

Thus, whatever the theme and the program that grew out of the recommendations of all of the previous White House Conferences, whatever the standards or the laws of conduct that were established and are now operating, and wherever responsibility has been defined for all who have concern for children, a common plea to perform these functions in the light of the individuality of the specific child has been made. We have been assured that this process of identification and respect for the individuality of the growing and developing child, operating in many ways, is the true spirit of democracy. We have been assured that it is in this way that children become "equipped for the successful practice of democracy" and operate as "socially minded, cooperative people without having sacrificed their individuality." Perhaps these are the components of the doctrine of individualism which was defined in the beginning of this talk as a doctrine which holds that the chief end of society is the promotion of the individual welfare and that the chief end of moral law is the development of individual character.

A historical assessment of the role of medical science and her disciple, the physician, as a part of our culture influencing children may help us to define more incisively the present impact of this component of our social structure and possibly also to define a more effective future role. Medical schools responded to these recommendations arising in the previous White House Conferences. The medical school curriculum progressively incorporated into its content more on growth and development of children, not only the physical and functional components but, with increasing emphasis, the mental, social, and psychologic attributes of growing and developing children. The field of pediatrics became identified as a major educational discipline in medical schools and as a major practical approach to the care of the child. Knowledge concerning growth and development became an integral part of each medical school curriculum. More research was done on all phases of growth and development—the physical, mental, emotional, functional, biochemical, immunologic, and others. Curriculums were adjusted and still are being changed so that the study of medicine is now becoming more a study of the interaction of man and his environment. The teaching of medicine now draws more and more upon the social sciences as the knowledge of these disciplines becomes more firmly established and less empiric. The impact of disease on the social structure and the impact of the existing social structure on disease in man have become areas of information that are presented with increasing clarity to medical students. General practitioners now find themselves spending about one-third of their time doing well-child care. Initially, this well-child care was primarily nutritional guidance but soon became an attempt to help parents to understand the individuality of their children during the period of growth and development. Individualized well-child care became the keystone of preventive pediatrics in its broadest sense.

During these past fifty years, the specialty of pediatrics evolved and now represents an important division of the practice of medicine. It contains over 7,000 appropriately certified specialists in the United States. This group now spend between 50 and 75 per cent of their time caring for well children. They are assuming the privilege of assisting the parent in understanding the individuality of the developing attributes of the child from infancy to maturity. It is now well recognized that a holistic approach is a primary requisite to the application of effective scientific knowledge of a preventive and therapeutic nature for infants and children.

While much has been done to bring social, psychologic, and psychiatric concepts into medical teaching, there is still much confusion. There is a great need for these related disciplines to define more precisely the channels of communication concerning scientifically established information. This information must be receptive to medical faculties disciplined in the precise sciences of physics, chemistry, and physiology. Information concerning the psychologic and psychiatric aspects of the child's emotional growth must be founded on basic scientific observations which define the phase of the individuality of the child in sound psychologic terms and, hopefully, in the future, even in biochemical and physiologic terms. Knowledge in these areas will be readily acceptable to physicians and help to destroy the defensive attitudes created by those who adhere to less basically established concepts concerning the nature of emotional and adaptive growth. It is increasingly apparent that the future physician and medical teacher will become more knowledgeable in the basic scientific aspects of medicine, as this type of knowledge is accumulating with tremendous rapidity. He will also become more knowledgeable in the psychologic and social areas, as they provide knowledge of a scientific nature. By his very nature, the person who enters the field of medicine is more receptive to knowledge of a scientific nature and less receptive to empiric, vague, ill-defined concepts which do not clearly reveal their implications on health and disease. Much knowledge is necessary concerning the biochemical and physiologic individuality of the growing and developing child. We are just beginning to learn that emotional responsiveness and emotional growth may be related to the biochemical and physiologic individuality. It is in these areas that the social and psychologic sciences must join hands with the medical sciences in helping to define more accurately the nature of growing and developing man.

THE PHYSICIAN'S ROLE

How then is the physician at present equipped to contribute to the welfare of children? Apart from the role of medical science concerning disease and its impact, this additional role appears to be rapidly developing. Parents now demand this role of physicians and others related to the medical sciences; they are becoming more informed concerning the importance of the physician to their own and their children's welfare, even when disease is not present. Parents are demanding sound and reliable knowledge concerning all aspects of human growth and development so that they may better understand their children and themselves and, thus, find their own unique and individual answers.

The physician, in counseling parents concerning growth and development, uses the word "normal" with greater caution. Physicians are now aware that each child has his own growth and developmental pattern. They are aware that the genetic potential of each infant is the composite product of many generations of genes and that the product produced by these parents has probably never been produced exactly in this way before. The standards of reference obtained by experience on groups of children serve only as rough guides of average expectancy but cannot be used to clearly define the individuality of the specific child at hand. Such individuality of expression can be defined only by careful observation of a longitudinal nature, and then a certain expectancy may be anticipated which permits a better understanding of the nature of the individual component of growth and development. This process of longitudinal observation of an objective nature on the part of the physician permits, to a certain degree, measurement of one portion of the genetic expressivity of the child. As data have accumulated, not only in regard to the physical aspects of growth and development but also concerning the physiologic, mental, neurologic, biochemical, and other counterparts of the process of growth and differentiation, the physician is increasingly able to define the individual in a more accurate and in a broader biologic manner. It is now the primary responsibility of medical science to prevent disease and to recognize disease in its incipiency. However, an evaluation of disease's earliest impact can be made only in the light of knowledge concerning the individual capacity of the various processes of growth and development that exist at the time the disease is expressing itself. Judgment in the application of specific knowledge concerning the treatment of disease now requires understanding of the relative limitations of the various physiologic and biochemical processes that may have been defined in this child by previous longitudinal observation of individual features of growth and development in the broadest sense.

VIEWING THE CHILD OBJECTIVELY

The necessity to interpret all aspects of growth and development under the term "total child" confronts the physician of today with a greater responsibility. It is his duty to try to understand the individuality of the physical and functional aspects of the infant shortly after birth. During the early period of development, he must try to convey to the mother and father the necessity of dealing with this child in an individual manner on the basis of his, as well as their, interpretation of the longitudinal progress that the child has already demonstrated. As this child is a product of their flesh, it is natural for the parents to subjectively evaluate the nature of this child on the basis of their understanding of themselves. The physician must have an objective approach to this child while the parents have often an exclusively subjective approach.

Helping the parents to view their offspring objectively permits a more careful scientific evaluation of the total individuality. As the individual attributes of the child are observed and interpreted by both parent and physician, a balance between objectivity and subjectivity can be achieved. Rather than experiencing disappointment when preconceived expectancies are not fulfilled, we find parents willing to accept the individuality of the physical or functional response and to anticipate certain kinds of responses on the basis of their previous observations of this child during the earlier periods of development and adjustment. Parents soon learn that certain types of responses or behavior may be average in this child, whereas in another child in another environment, such a response may be a deviation or an expression of pathology. The infant respected for his individuality may find that this kind of environment requires him to respect others for their individuality. By a process of social inheritance, a capacity for some degree of objectivity may also be developed in the child as he finds it necessary to relate to other members of his family and to his environment. The cultivation of an appropriate balance of objectivity to subjectivity in regard to others appears to be a process upon which appropriate emotional growth can evolve.

DEFINING VALUES

This problem of interpersonal relationship appears to be one of our largest ones for the future. Communication at any level, individual or by social groups, requires a careful evaluation of all components of the individuality of the person or of the social group. We cannot rigidly impose our traditional values, subjectively evolved beliefs and faiths, or political ideology upon others. The real values within each of these must be appropriately defined in the light of the individuality of the person or the social group we wish to aid.

In initiating the first steps toward good interpersonal relations, the physician has come to play an increasingly important role as he assists the parents in guiding and interpreting the individual nature of the growth and developmental processes taking place in their child. There are few other professional people in our American culture who have as early and as intimate a continuing relationship with the child and the parents. There are few professional people with multi-discipline backgrounds who have this unique and continuing opportunity. The teacher, minister, social worker, psychologist, and others contribute to the welfare of children. However, our culture does not provide for them as early and as unique an opportunity. Through the application of the physician's skills and understanding of the individuality of the processes of growth and development, he has the privilege of objectively defining with the parents the nature of the child. This process provides an opportunity to cultivate a family environment in which respect for the individual and for what he is and is becoming should permit that child to develop to his fullest a capacity for good interpersonal relationships with members of his family and, later, with society.

SUMMARY

This overemphasis and excessive attention to individuality may bring concern to some. Webster defines the individualist as "one who practices egoism." Such a definition would suggest that there is a disinterest in others, that there would be encouragement for nonconformity to existing social climate, or that this would lead to rebellion against, or indifference toward, society. Individualism, some say, has no regard for those traditionally established values of the past that were effective parts of society. The desire to permit the expression of the individuality of children does not mean complete permissiveness, as was interpreted by others in the past. Even biologic individuality has its limits. Just as physical growth and development must fall within certain ranges of expression, so do intellectual, social, and psychologic expressions fall within certain ranges for growing and developing children. Our observation of the nature of the specific, individual needs of the growing and developing child helps us to adjust the limits of conformity within which the best performance can be achieved.

One cannot help but be impressed by the tremendous opportunity and responsibility confronting the physician of today and tomorrow. He has the opportunity of strengthening and influencing, for better or worse, the character of our future citizens. He has the privilege of watching over that part of life of the human being that is of importance to the kind of adult he is to become. It is apparent that the disciplines of medicine, particularly those concerned with infants and children, and the total discipline of human growth are closely related. The study of human growth and of medicine must embrace genetics, anthropology, psychology, and sociology, as well as basic medical sciences of biochemistry, physics, physiology, and anatomy. The field of pediatrics is essentially a subdivision of the broader specialty or study of human growth. To idealistically pursue its objectives, medicine must become more and more dependent upon the fields of physics, chemistry, mathematics, and the technologic sciences in the broadest sense. The public have come to know and now demand the benefits of this knowledge. However, of equal and increasing importance is the dependency of medicine on the fields of genetics, sociology, anthropology, and psychology for accurate scientific knowledge that may be applied practically to the individual human organism during the period of growth and development. Parents now demand the application of this knowledge by the medical profession. The physician has a real responsibility in helping to develop citizens for a democratic society.

PEPTIC ACTIVITY is arrested at 30° C., but intragastric temperature depression is not practical as a supplement to dietary management of peptic ulcer. Human gastric juice with a pH of 1.8 shows no activity at or below 31° C.; about 12 per cent of a bolus is digested at 32° C., and this rapidly increases to 46 per cent at 36 to 38° C. Optimum peptic activity occurs at 50° C., well above normal body temperature. Even after fasting, however, patients cannot eat sufficient quantities of iced foods to keep intragastric temperature below 32° C. for more than an hour.

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SALINE LAVAGE is a safe and effective treatment for tracheobronchial aspiration and atelectasis. From 200 to 400 cc. of saline are used and as much as possible is aspirated by suction after instillation of each 50 cc. The saline has little effect on the lung when the patient is given assisted positive pressure ventilation, and lung compliance is rapidly restored to normal range.

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Carcinoma of the Prostate

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Carcinoma of the prostate is one of the most common malignancies found in men. Probably because of increasing longevity of the male population and increasing awareness on the part of the medical profession, the diagnosis is being made more often. The true frequency, as judged by medical literature, depends on whether only clinical carcinoma is reported or whether postmortem statistics are included. Also, the latter can be, and are, affected by the number of serial sections taken from the prostate at autopsy. Determination of the true incidence is confused still further by the difficulty pathologists often find in differentiating early carcinoma from infection or metaplasia in the prostate. Be this as it may, the incidence is usually accepted as between 10 and 20 per cent of all malignancies in adult males.

While carcinoma of the prostate is difficult for the pathologist to diagnose in early stages, tissue from most clinical cases still fits a typical histologic picture (figure 1): irregularly shaped cells with large, clear nuclei arranged in glands that are "back to back" with only very small amounts of supporting stroma. These cells appear to infiltrate and are usually found within the perineural lymphatics. However, perineural lymphatic invasion alone is not evidence of metastasis, although its presence is usually necessary to confirm the histologic diagnosis.

Previously, the lesion of carcinoma was thought to originate as a small area in the posterior lobe of the prostate. We feel that evidence is now accumulating to show that it begins, instead, as several distinct and separate foci in various portions of the gland. To most clinicians this might seem to be of only academic interest, but it has an important bearing on the treatment of early prostatic carcinoma.

From its origins deep in the prostate or in the prostatic capsule, the tumor infiltrates by spreading into the seminal vesicles, the neck of the bladder, and the regional pelvic lymph nodes. Extension may occur to any or all contiguous structures but, strangely, Denonvilliers' fascia, which separates the prostate from the rectum, usually appears impervious to carcinoma of the prostate. Therefore, even though extension of rectal carcinoma into the prostate is not unusual, infiltration of prostatic carcinoma into the rectum is indeed uncommon.

From the regional pelvic lymph nodes (most commonly, internal iliac), tumor cells spread to the periaortic nodes and, not infrequently, to the cervical and supraclavicular lymph chain. In these sites, enlarged nodes are usually the alerting signal to lymphoma or hematogenic diseases or to metastatic tumor from stomach, lung, or other organs. It is often thought that metastasis from prostatic carcinoma in peripheral lymph nodes is rare, but in our experience it has been found not infrequently. Enlarged inguinal lymph nodes, too, sometimes are due to prostatic carcinoma.

In addition to local infiltration and lymphogenous extension, hematogenous spread is also common. Such metastasis occurs via the vertebral veins, and consequently the bones most commonly affected are the bodies of L-5 and the other lumbar vertebrae, the pelvis, ribs, and femurs, in that order of frequency. The lung and liver also may be affected by hematogenous spread of prostatic carcinoma.

The lesion in the prostate has been described previously. Invasive prostatic carcinoma in the bone produces a more typical picture (figure 2): The characteristic glands and cells are still present and produce lysis of bone with some infiltration of the bone marrow. However, this meta-

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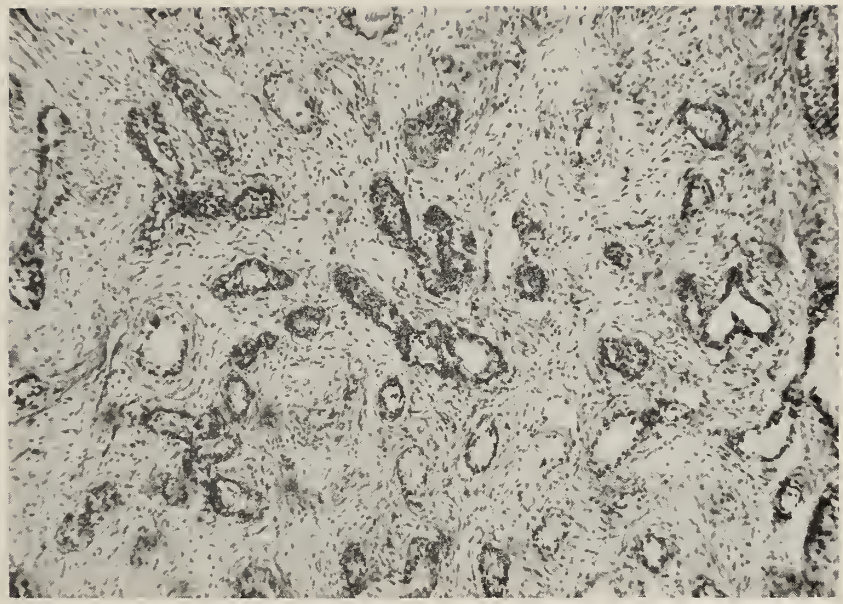


Fig.1. Histologic section of carcinoma of the prostate (× 100)

static tumor at this stage also increases bone formation or density or sclerosis on its periphery, resulting in areas of bony softness surrounded by much harder, more sclerotic areas. Resultant softening of the supporting structures allows pathologic fractures to occur, but strengthening of these structures makes the hardened portions difficult to cut with a saw at autopsy.

ETIOLOGY

Having considered the changes caused by this tumor, let us look at the etiology. Cancer of the prostate is found principally in men over the age of 55, although younger men may have this disease. Because of its relationship to benign prostatic hyperplasia and its frequent onset at the time of hormonal alteration, it has been suggested that hormonal change is the etiologic agent. Prostatic calculi have been indicted also, but, at least theoretically, a chronic foreign body should produce a squamous-cell carcinoma. This seems unlikely, however, since malignancy of the prostate is most commonly an adenocarcinoma. It can be truly said that no more is known concerning the etiology of carcinoma of the prostate than is known of the etiology of any other carcinoma at present.

SYMPTOMS

Symptoms of prostatic carcinoma appear late and are almost always the result of metastases or local spread. *An early localized carcinoma*

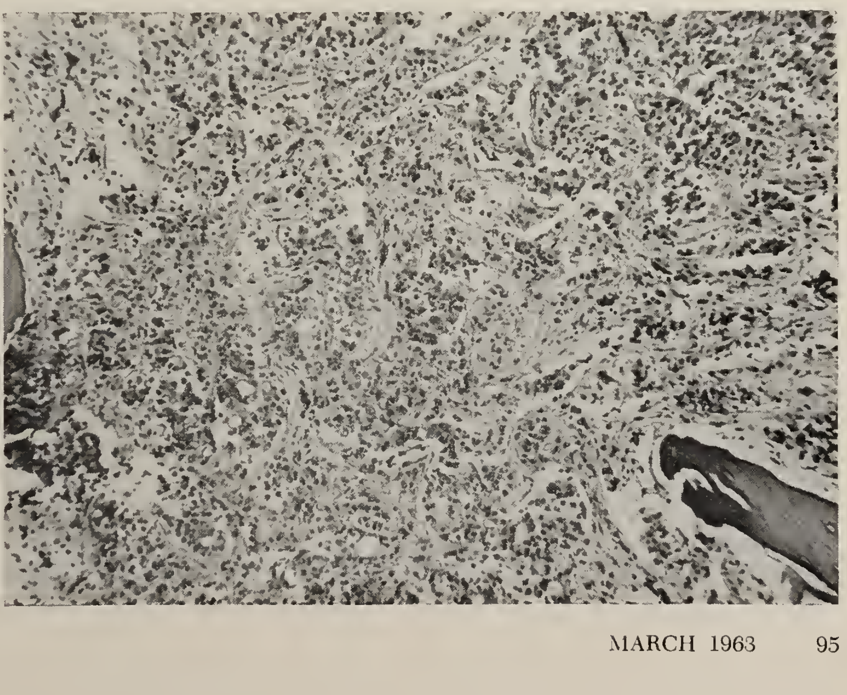


Fig. 2. Histologic section of carcinoma of the prostate in bone (× 100)

of the prostate produces no symptoms. Later, when the prostate becomes large and presses inward on the prostatic urethra or bladder neck, symptoms of prostatism may occur, with diminution in size and force of the urinary stream, frequency of urination, and nocturia. This same local spread, when it extends upward into the region of the ureters and near the seminal vesicles, will obstruct the ureters and produce symptoms of uremia with weakness, nausea, and later, oliguria. When the cancer spreads to bone, it produces severe deep bone pain with weakness, weight loss, and anemia.

Early diagnosis of carcinoma of the prostate rests upon rectal examinations. Since symptoms are absent in the early stages, only screening by routine rectal examinations will find the tumor early enough to allow curative procedures. The cancer may be found as a small, hard nodule in the posterior or lateral portion of the prostatic gland. When located, it should be noted whether the indurated area extends into the seminal vesicle or outside the prostatic capsule. When felt, such areas should always be biopsied, as *rectal examination alone is not an adequate method of making a diagnosis.* Prostatic calculi, chronic granulomatous prostatitis, and benign adenoma of the prostate may simulate malignancy, and only biopsy can confirm or deny it.

By the time the patient is first seen by a physician, the cancer usually has spread from its origin in the prostatic lobes to encroach on the prostatic urethra and vesical neck. This encroachment produces symptoms of lower urinary tract obstruction and the tumor usually has extended locally or into the seminal vesicles or has already produced distant metastases.

Urinary symptoms, when present, develop gradually, with frequency of urination, nocturia, hesitancy, and diminution in size of the urinary stream. Later, there will be acute urinary retention. Hematuria may occur, but it is often a late finding.

In about 20 per cent of cases, hydronephrosis may produce flank or lower abdominal pain. Hydronephrosis is caused by extension of the tumor from the vesical neck or seminal vesicles, encroaching on the ureters, with resultant obstruction. This obstruction points to a poor prognosis and often causes death.

If the pelvic lymphatics are sufficiently involved by the tumor, unilateral or, less often, bilateral edema of the lower extremities may be seen. When metastases to bone occur, there is often low backache with hip pain. This pain is deep, constant, and severe, requiring large doses of narcotics for its relief. Later, when the bone marrow has been affected, marked anemia ensues and there is weakness, loss of weight, and emaciation.

Lymphadenopathy, either cervical, inguinal, or supraclavicular, may be the presenting complaint and is sometimes found without evidence of metastases to bone. Such complaints usually indicate a very serious prognosis.

PHYSICAL FINDINGS

The physical findings in carcinoma of the prostate are principally those demonstrable on rectal examination. In early carcinoma, a small, indurated discrete nodule may be palpated in the prostatic gland. Such a lesion may be caused by prostatic calculi, fibrosis of the prostate, chronic granulomatous prostatitis, or occasionally, benign adenomatous hyperplasia, as well as by carcinoma. Prostatic calculi can be seen radiographically in films of the pelvis but may occur concomitantly with carcinoma. The figure will vary with the examiner's level of suspicion, but usually about half of suspected prostatic lesions will eventually turn out to be carcinoma. Because of this, a biopsy proving carcinoma should always be obtained before instituting therapy.

BIOPSY

Tumor extension beyond the confines of the prostate usually can be palpated as areas of induration. We feel that biopsy of suspicious areas of induration in the prostate must always be carried out and that open biopsy is by far the most accurate of several methods. Tissue can be obtained by either the perineal or retropubic routes, although in our hands the perineal is best. Since the carcinoma is usually found in the posterior lobe, the perineal approach offers the advantage of direct vision plus the opportunity to obtain accurate excision of the lesion. Immediate frozen sections should be made from this biopsy material, and, if carcinoma is found, radical prostatectomy should be performed immediately. If the result of the biopsy is doubtful, the wound can be closed; if the final report, based on the hematoxylin-eosin slides, is positive, the wound may be reopened and prostatectomy may be carried out without technical difficulty. Alternately, radical retropubic prostatectomy may be performed through a suprapubic incision, thus obtaining all the advantages of the combined abdominoperineal radical prostatectomy.

Retropubic prostatic biopsy, in our hands a more difficult procedure, is performed by elevating the prostate from the rectum and rotating the gland to expose the lesion. The principal

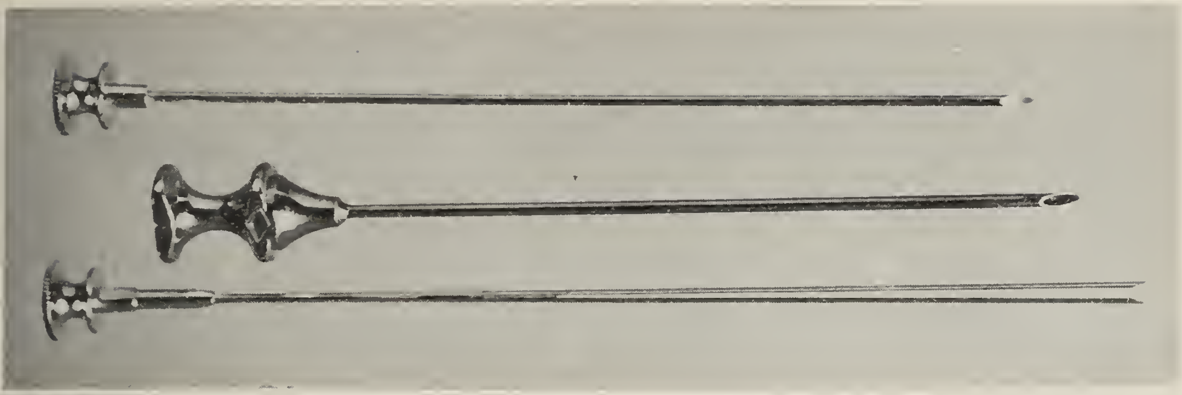


Fig. 3. Franklin modification of Vim-Silverman needle

advantage of this procedure is the opportunity to inspect the iliac lymph nodes for possible metastatic involvement.

Transurethral biopsy of the prostate, using the resectoscope, may sometimes be of value in advanced cases. However, the tumor usually arises in the portion of the prostate most remote from the resectoscope and this technic is therefore not reliable in early prostatic tumor.

Transrectal prostatic biopsy, or biopsy through the rectal wall, is performed by many urologists, but we feel that it is contrary to surgical principles and do not use it. In preparation for transrectal biopsy, the bowel is customarily prepared with neomycin. After a rectal speculum has been introduced, a needle is passed into the prostate and biopsy is carried out. Often a small incision is made in the rectal wall and a biopsy specimen is removed from the prostate with biopsy forceps. Proponents of this technic claim great accuracy for it. However, we do not like to pass from a contaminated structure such as the lumen of the rectum into presumably clean tissue such as the prostate. Also, this procedure would seem to make subsequent radical prostatectomy more difficult and conceivably could result in recto-urethral fistula.

In our hands, next to open perineal biopsy, the perineal needle biopsy has given the greatest satisfaction. We prefer the Franklin modification of the Vim-Silverman needle (figure 3). Local anesthesia supplemented with 25 mg. of alphaprodine (Nisentil) is satisfactory, although anesthesia with thiopental sodium (Pentothal Sodium) and nitrous oxide can be used with excellent results.

Although patients are usually hospitalized for perineal needle biopsy, it can be performed on outpatients equally well. After induction of satisfactory anesthesia, a finger is inserted into the rectum. The needle with obturator is passed into the perineum, just anterior to the rectum, where it can be felt through the rectum and its point directed to the suspected lesion in the prostate (figure 4). It should not perforate the rectum. When the point of the needle is against the nodule, the obturator is removed and the cutting blades are inserted and advanced into the lesion. At this point the sheath or needle is advanced over the blades. When the blades are encased within the sheath, they are withdrawn and the cylinder of tissue is removed. Now the sheath can be moved into position to obtain another cylinder and the blades are inserted, and so on. Usually we take at least 5 cylinders of tissue in each biopsy session. These cylinders are immediately placed in formalin and sent to the pathologist for his opinion (figure 5).

Although it is easy for the physician to perform and easier for the patient to undergo, peri-

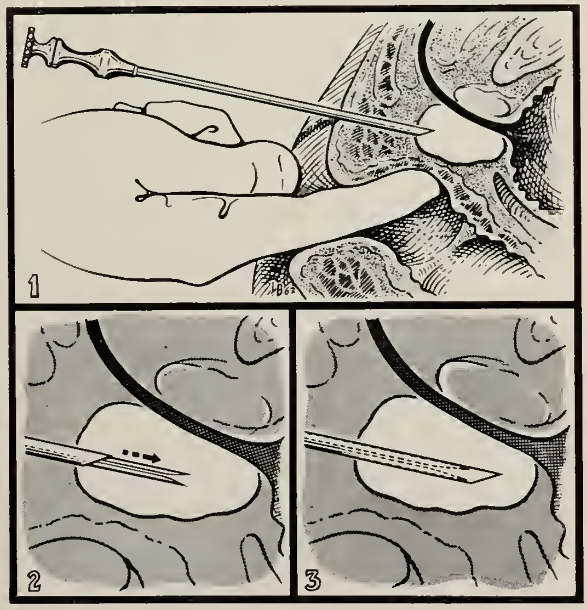


Fig. 4. Technic of needle biopsy of prostate. (1) Needle in position for biopsy. (2) Cutting blades inserted into prostatic lesion. (3) Sheath advanced over blades

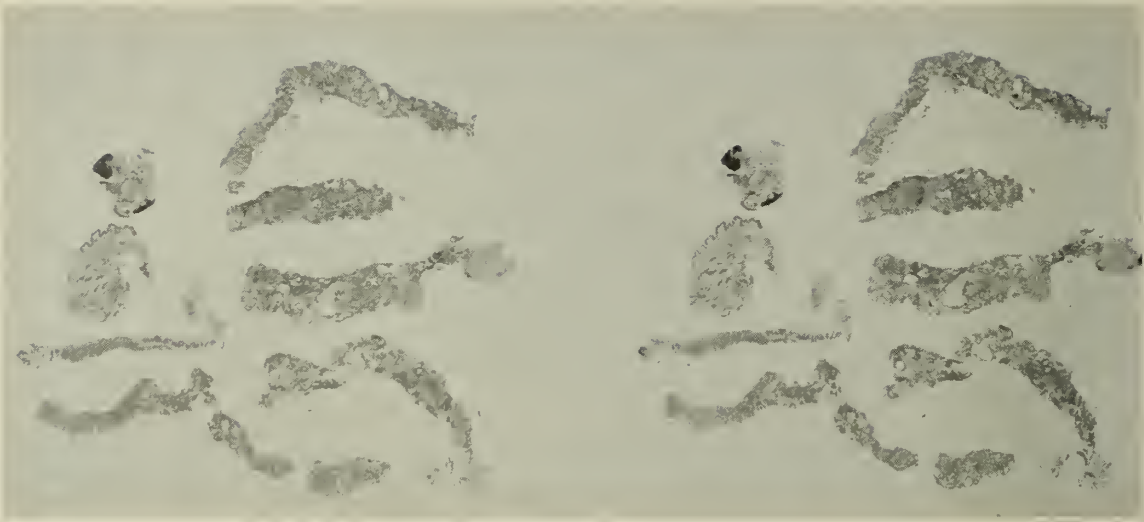


Fig. 5. Prostatic needle biopsy specimens ready for microscopic examination

neal needle biopsy is moderately inaccurate, as compared with open perineal biopsy. Therefore, if a report of "no carcinoma" is returned by the pathologist, we always perform a second biopsy. If this is also negative for cancer, we accept the report as moderately accurate. In the last seven years we have seen only 1 untreated patient who had had 2 negative needle biopsies but was shown subsequently to have carcinoma of the prostate.

Needless to say, next to obtaining biopsies, the most important factor in diagnosis is a good pathologist who is able to interpret the nuances of prostatic pathology.

In the past, there was much interest in diagnosing of carcinoma of the prostate by exfoliative cytology: examination of prostatic secretions obtained by massage of the prostate gland. This method is seldom used today because it is felt that massage, if vigorous enough to express acinar epithelial cells, is also likely to encourage metastatic extension of the tumor.

RADIOLOGIC DIAGNOSIS

Radiologic study of the bones always plays an important part in the investigation of patients with suspected prostatic carcinoma. It is true that such examination shows only metastatic lesions and therefore is of greatest value in advanced cases. Still, a roentgenogram that is negative for metastases will aid in the proper staging of the disease. As a screening procedure, a film of the kidney, ureter, and bladder, with a separate film of the pelvis, is probably adequate, since this includes the bones to which early metastasis most commonly occurs. These metastatic lesions appear as areas of increased density and may be single or multiple (figure 6). The lumbar vertebrae may be partially involved or may appear solid. Although carcinoma of the thyroid can produce similar lesions, fortunately their occurrence is rare in this location. The principal condition which causes difficulty in interpretation of these roentgenograms is Paget's disease of the bones. Here, although there is increased bone density, the typical trabecular pattern is still present or is increased. On some occasions, a subperiosteal deposition of bone is present.

Occasionally osteolytic areas occur in cancer of the prostate and sometimes these are seen concomitantly with osteoblastic areas. These osteoblastic areas do not necessarily become less dense as the patient improves under therapy and the metastases diminish but may actually appear more obvious and dense for a period up to six months. Then, as the period of improvement

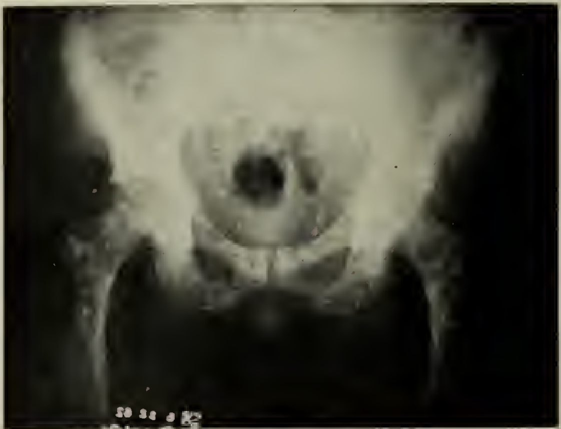


Fig. 6. Roentgenogram of typical metastatic lesions

lengthens, the metastases seem to become less dense. One should be cautious in stating that metastases are not present, on the basis of roentgenographic examination alone, as our experience indicates that radiologic evidence of metastases is not obtained until quite late, and small or very early metastatic lesions in bone can be missed.

ACID PHOSPHATASE

Since 1938 when Gutman and Gutman published their classic work on serum acid phosphatase, prostatic carcinoma has been one of the cancers in which biochemical determinations are of great value. This enzyme, elaborated by the cells of the prostatic epithelium, is present in high concentration in prostatic secretions. Under ordinary circumstances this enzyme does not reach the blood stream in large quantities, and most of the measured serum acid phosphatase is derived from the liver, spleen, and blood cells. However, when cancer of the prostate has metastasized to bone, liver, or lymph nodes, the acid phosphatase formed by the neoplasm in these tissues passes into the circulation and produces an elevation of the serum acid phosphatase. Such an elevation may also occur following any type of prostatic massage or manipulation or instrumentation of the posterior urethra. However, rises in serum acid phosphatase following examinations are only transient and, we have found, last up to eight hours. Therefore, to preclude false elevations, blood should not be drawn for this test less than twenty-four hours after rectal examination. Other conditions that are thought to produce increased amounts of the enzyme in the blood are liver or renal disease, Gaucher's disease, and conditions causing intravascular lysis of erythrocytes. Elevations caused by such conditions are rare and, as a practical matter, can be considered almost nonexistent. We feel that if the blood is properly collected, elevation of serum acid phosphatase can be interpreted as indicative of distant metastases from cancer of the prostate.

There are 2 principal methods for measurement of serum acid phosphatase: the Bodansky and the King-Armstrong. Many modifications have been devised but the principles remain the same. The Bodansky method measures the phosphatase released by the hydrolysis of glycerol phosphate, and the upper limit regarded as normal in most laboratories is 1 Bodansky unit. The King-Armstrong method measures the hydrolytic activity of the phosphatase on a substrate releasing phenol. We believe the normal upper limit for this test is 4 King-Armstrong units.

In 1949 a technic for measuring the prostatic portion of serum acid phosphatase was devised, using the inhibition of the prostatic portion by levotartaric acid. This technic makes the test much more sensitive and, in our experience, when the serum has been properly collected, an elevation of prostatic acid phosphatase always means distant metastases from cancer of the prostate. We have not yet found a patient with purely local spread and without distant metastases, whose level was elevated, again stipulating that the serum was collected properly.

Although the technic of performing this test is quite complicated and is not feasible for the small laboratory, the method of collection is quite simple. The patient must be fasting. Blood is drawn from the antecubital vein and is allowed to clot. *Immediately* when clot retraction occurs, the serum is withdrawn and centrifuged to remove all vestiges of erythrocytes. (These erythrocytes contain acid phosphatase and their lysis will materially influence the test.) Then the supernatant serum is frozen and sent to the nearest laboratory performing the test. For the last three years, instead of freezing the serum, Dr. Richard Doe and the laboratories of the Veterans Administration Cooperative Urological Research Group have been mixing it with measured numbers of disodium citrate tablets and have found no significant deterioration within periods up to three weeks. This technic would allow a physician, working in his office or in a small laboratory, to draw blood, collect the serum, mix it with the preservative tablets, and mail it to a laboratory, even one in a distant city, for accurate determination of prostatic and serum acid phosphatase. We feel that now, at last, collection can be made anywhere and is no longer restricted to large cities.

At this time we should like to emphasize that distant metastases from carcinoma of the prostate do *not* always produce elevation of prostatic and serum acid phosphatase; in about 20 per cent of patients with metastases, the acid phosphatase levels may remain normal. This is a positive test: *When acid phosphatase levels are elevated, metastases are always present; when normal, metastases may be present or may not.*

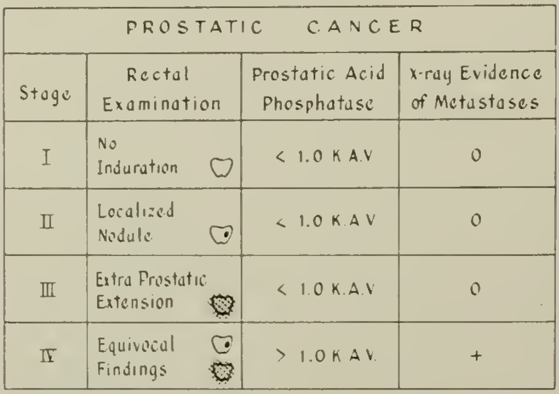
Besides the roentgenographic findings and the alterations of the serum acid phosphatase level, cancer of the prostate produces the usual effects on other organs of the body, depending on the direction of growth or sites of metastases. Usually, anemia will be marked when metastasis has occurred, and, occasionally, circulating fibrinolysin will be found in the serum. When present, such fibrinolysin might make surgery hazardous but in our experience it has been encountered only occasionally. Pyuria or hematuria may be present if the prostatic urethra is invaded by carcinoma or is obstructed, and, if the ureters are obstructed, azotemia may occur.

STAGING

Before selecting and beginning treatment it is necessary to determine the proper stage of the carcinoma. Many methods have been devised in the past. On a practical basis, we prefer the system now approved by the World Health Organization Task Force on Staging and Progress, which is being used by the Veterans Administration Cooperative Urological Research Group. This system divides all cancers of the prostate into 4 stages, based on the results of rectal examination, roentgenographic studies of the skeleton, prostatic or total serum acid phosphatase, and biopsy from the prostate (figure 7). Stage I is the so-called "carcinoma in situ" or latent carcinoma of the prostate. Stage II is early carcinoma which can be detected by rectal examination and which has not spread beyond the confines of the prostate. In Stage III, the carcinoma has spread into the seminal vesicles or outside the capsule of the prostate, without evidence of distant metastases. (Arduino and Glucksman have shown that, in a significant number of these patients, the local or pelvic lymph nodes are also involved.) Stage IV is that in which distant spread of tumor has occurred—into the liver, distant lymph nodes, bone, or other remote tissues of the body. For purposes of treatment we consider both Stage I and Stage II as surgically curable and Stage III and Stage IV as incurable, with treatment to consist of specific palliative measures.

STAGE I—DIAGNOSIS AND TREATMENT

Stage I carcinoma of the prostate has been called latent carcinoma or carcinoma in situ. There are no physical findings suggesting neoplasm on rectal examination, and no metastases are demonstrable by roentgenogram or acid phosphatase determinations. Thus, it is impossible to diagnose carcinoma in this stage except by subtotal prostatectomy or prostatic resection for any cause, with diagnosis established on the basis of histologic study of tissue removed. Often nests of carcinoma will be seen in only 1 or 2 sections and the inclination is to consider the carcinoma completely excised. Recent evidence indicates that such an assumption will be false, as carcinoma is usually multicentric in origin and in many cases there is residual carcinoma. This residual carcinoma can be just as malignant and dangerous as that of any other stage and therefore should be properly treated.



PROSTATIC CANCER			
Stage	Rectal Examination	Prostatic Acid Phosphatase	X-ray Evidence of Metastases
I	No Induration	< 1.0 K A.V	0
II	Localized Nodule	< 1.0 K.A V	0
III	Extra Prostatic Extension	< 1.0 K.A.V	0
IV	Equivocal Findings	> 1.0 K A.V.	+

Fig. 7. Diagram of system of staging of prostatic cancer

There are many who feel that such carcinomas are less malignant than those in other stages, and conservative treatment with oral estrogens may be used. There is some merit in this plan which may be of value in patients with extremely poor cardiac reserve or in those above the age of 80. However, it should always be remembered that such treatment is merely palliative and allows the cancer to remain in the prostate, from which site local spread or metastasis can occur, with resultant loss of life. Since carcinoma at this stage is curable, we feel that the only desirable treatment is that which should produce cure: radical prostatectomy.

To many physicians the term "radical prostatectomy" is very misleading and brings visions of living, though mutilated, patients. Actually, radical prostatectomy is nothing more than total prostatectomy with seminal vesiculectomy, the bladder neck being anastomosed to the membranous urethra. The operation is quite simple in the hands of one trained in its performance and may be done through either a suprapubic (retropubic) or perineal approach. Each has its virtues and minor technical modifications, but it is best for the surgeon to employ the procedure that has been most successful in his hands.

Radical retropubic prostatectomy is performed with the patient in the supine position. A midline or transverse incision is made in the abdomen just above the pubis, exposing the rectus sheath, which is cut in line with the incision. The rectus muscles are retracted, exposing the prostate beneath the pubis. Since the puboprostatic ligaments contain a very large vein, they are ligated before being cut. The urethra is transected and the prostate is raised off the rectum. The seminal vesicles and vasa deferentia are then freed from surrounding tissue. The prostate is cut from the bladder neck and removed. The bladder neck is then sutured to the urethral stump, drains are placed, and the wound is closed. Blood loss should be minimal.

Radical perineal prostatectomy is performed with the patient in the exaggerated lithotomy position. An inverted U incision is made in the perineum, exposing the rectal wall and the perineal muscles. The levator ani muscles are spread from the midline and the prostate gland is exposed. The rectum is reflected from the prostate posteriorly and the seminal vesicles and vasa deferentia are freed. Then the urethra is transected, the puboprostatic ligaments are cut, and the prostate is cut from the bladder neck and removed. The bladder neck is sutured to the stump of the urethra and the wound is closed.

The principal complications connected with these 2 procedures are impotence, incontinence, and rectal injuries. Impotence occurs in all instances when a *total* prostatectomy is performed, and although it is complete and untreatable, it is a low price to pay for cure of cancer. Then, too, many patients who require this operation are already impotent or almost so, and to such men this would appear a complication hardly worthy of the name.

While impotence is not a large problem to these patients, incontinence may be a serious handicap. Incontinence does occur following radical prostatectomy, but with nowhere near the frequency attributed to it by many physicians. At this hospital in the last two years, 17 radical prostatectomies have produced only 2 patients who are incontinent, according to our definition.

Almost all patients have various degrees of incontinence during the first three postoperative months. However, with sphincter exercises, almost all will regain complete continence within the first six postoperative months. Any type of incontinence clamp or bag is banned on our service, as sphincter action returns only if the sphincter is used. It is not used, of course, when the employment of incontinence bags reduces the need for voluntary effort. These measures can and do work, as shown by the fact that only 2 of 17 prostatectomy patients are incontinent—1 of these is very senile while the other has an out-and-out case of incontinence.

Rectal injuries can occur during prostatectomy, and their infrequency is directly related to the surgeon's skill. Such injuries, usually perforations, occur most commonly when the prostate and rectum are being separated. To prevent recto-urethral fistulae, we customarily prepare the patient's bowel as an extra precaution, on the off-chance that injury might occur.

STAGE II—DIAGNOSIS AND TREATMENT

When a hard, localized nodule is felt in the prostate gland, but with neither biochemical nor roentgenographic evidence of metastases, we speak of this carcinoma as being in Stage II. *Treatment for Stage II carcinoma is radical prostatectomy.* We feel that other forms of treatment with estrogens, orchidectomy, various types of irradiation, or chemicals, are all contraindicated in this stage and only radical prostatectomy should be performed.

Biopsy is most easily and best obtained by the open method in which the patient is prepared for radical prostatectomy, the prostate is exposed perineally, and the nodule in the prostate is excised. Frozen sections are made and, if carcinoma is seen, the operation is continued and radical prostatectomy is carried out. If cancer cannot be found on the frozen sections, routine paraffin sections are cut. Meanwhile, the perineum is closed. If cancer is found when the paraffin sections are studied, the wound is reopened and radical prostatectomy is performed. Sometimes, instead of reopening the perineum, we prefer to open the abdomen and perform a radical retropubic prostatectomy, having found that, with the prostate already freed from the rectum, retropubic prostatectomy is quite easy and can be performed in about one hour.

At this time we would like to mention, but only to condemn, the practice of palpating a prostatic nodule and then "watching it" for six months or more. Presumably this period of observation allows the cancer to become more definite. In reality, it does allow the cancer to become more definite but only because it has progressed to an inoperable stage. We think it cannot be stressed too strongly: *If in doubt—perform a biopsy!*

STAGE III—TREATMENT

When carcinoma has progressed to Stage III it is no longer curable. In Stage III the cancer has spread through the prostatic capsule and may be found in the seminal vesicles, the surrounding pelvic tissues, bladder neck, or trigone. Arduino and Glucksman noted involvement of *local pelvic* lymph nodes in a large number of patients with Stage III carcinoma. Because of this spread, treatment is of necessity palliative or conservative.

In the past, hormonal control of prostatic cancer has consisted of bilateral orchidectomy or administration of estrogens, or both. The mode of action of hormonal and antihormonal therapy is not completely understood. The benefit produced by orchidectomy apparently results from at least partial removal of androgenic hormone, upon which the cells of normal prostatic epithelium and prostatic malignancy are dependent. The effect of estrogenic substances is considered to be due to inhibition of follicle-stimulating hormone (FSH), upon which the androgenic activity of the testis is thought to depend. This inhibition of FSH has been thought also to inhibit androgen production from extragonadal sources. Direct action of estrogens upon prostatic cancer cells themselves must be considered also.

The relative effectiveness of these therapeutic efforts has not been shown conclusively, although many varied and conflicting reports have been issued. Until more accurate information is available, we must consider each of equal value, with little or nothing to recommend one over the other. In the Veterans Administration, a large group study is now attempting to make just such a comparison.

When estrogen therapy is used, we feel that stilbestrol is the drug of choice; this should be used daily in a dosage of 5 mg. orally. Many claims have been made for the superior effect of other estrogenic substances, some natural and some synthetic, but we feel that none of these agents bears significant advantages over stilbestrol, which is also one of the cheapest estrogenic substances. The recommended dosage of stilbestrol has varied from 0.1 mg. a day to 500 mg. 3 times daily, and the drug has been administered intramuscularly and intravenously as well as orally. In our experience, 5 mg. of stilbestrol orally each day is best, and we seldom see reason to vary this. When the patient cannot be depended upon to take his medication or for some reason is unable to swallow the stilbestrol, we use Estradurin, a synthetic estrogen which is given intramuscularly at monthly intervals. We prefer to inject 40 mg. of Estradurin into the gluteal muscles once monthly.

Orchidectomy for cancer of the prostate should always be bilateral and complete. Subcapsular orchidectomy, in which the testicular capsule is incised and the testicular tubules are removed, should not be performed. It has been shown that there are androgenic cells in the testicular capsule and, if this capsule is not removed, the full benefits of orchidectomy may not be achieved. Very few patients oppose orchidectomy when it is offered as treatment for this dread disease. Some men may, for personal vanity, desire the insertion of testicular prostheses. Many substances have been used for these "testicular falsies" but lucite is probably the best material, being light in weight and producing little or no reaction. Stainless steel ball bearings were tried, but their weight in the very elastic scrotal wall soon made their use impractical, besides producing a situation analogous to Captain Queeg's idiosyncrasy.

Besides the hormonal or antihormonal therapeutic attempts in Stage III carcinoma of the prostate, various methods of radiotherapy have been used. Probably the most widely known and best of these has been the injection of radioactive gold (Au^{198}) into the prostatic tumor itself. The principal work on this modality has been done by Flocks, who has used it extensively. Radioactive gold in a colloidal suspension is injected into the prostate through a retropubic or perineal incision. Since 95 per cent of the radiation emitted consists of short, penetrating beta rays, and since the half-life of radioactive gold is only sixty-five hours, undesirable irradiation of surrounding structures can be avoided. This material is difficult to handle, and, despite Flocks' excellent results, we prefer to reserve its use for the unusual case.

Radioactive yttrium, as well as radon and radium, have also been used. High-energy irradiation has also been tried with radioactive cobalt or supervoltage x-ray machines. These are not advocated for general use at this time.

Since individual patients with prostatic carcinoma vary widely in their response to different treatments, conclusive results are difficult to state. However, on the basis of our own experience, it is our impression that most of these men, when treated with orchidectomy, will live five years or more with their disease, but without major disability.

STAGE IV—TREATMENT

When carcinoma of the prostate has progressed into Stage IV, distant metastasis has occurred and the serum acid phosphatase is elevated, or there is roentgenologic evidence of metastases in the bones, or cervical or other peripheral lymph nodes may be invaded. This indicates a grave prognosis, with most patients living only eighteen to twenty-four months. Occasionally, some men in this stage live five, ten, or even fifteen years after their tumor is discovered, but there are just as many whose tumor grows extremely fast and who die within six months after beginning treatment. When discussing the outcome with the patient, the prognosis should always be guarded, since there appears to be little if any correlation between the histologic appearance of the tumor, the level of serum acid phosphatase, and the clinical activity of the cancer.

Therapy for Stage IV tumor is the old stand-by of estrogen and orchidectomy, or both, as in Stage III. Again, in this stage there are no truly reliable facts to recommend one treatment over the other. Our personal preference, at this time unsupported by statistics, is that estrogens are of greatest value in this stage, and orchidectomy adds little or nothing to their effect. Again, as in Stage III, we prefer 5 mg. of stilbestrol daily.

Treatment of this type usually produces rather dramatic results, with the serum acid phosphatase level dropping markedly, often to normal. The severe pain diminishes or disappears, the patient's appetite improves, and he gains weight and strength. The blood hemoglobin increases and the severely ill man looks well again. From most parameters, the patient feels better and looks well, yet roentgenograms of the bones show little if any change from films made before treatment. Despite this improvement, the symptoms begin to recur, usually within eighteen months, and the downward course begins. Reasons for this regression are unknown at present, but androgen secretion by the adrenal in response to hypophyseal stimulation or escape of the adrenal from the antiandrogenic effects of the estrogen are possibilities.

Whatever the causes of regression, however, certain procedures may be of value. Bilateral adrenalectomy has been performed by Huggins and Scott and others in an effort to completely extirpate the possible sources of androgen. In the past, bilateral adrenalectomy was extremely dangerous, but, since the introduction of cortisone, it has become more popular. Relief of pain appears to be the principal result of this operation, with little or no remission in the progress of the disease. While adrenalectomy does relieve pain and thus produces some palliation, it is a major operative procedure with relatively high mortality. Accordingly, means were sought to produce a so-called "medical adrenalectomy," using cortisone. Cortisone inhibits the pituitary production of ACTH and thereby suppresses the output of adrenal androgens. Such therapy seems to act in a manner similar to adrenalectomy, relieving pain but producing no regression in the tumor.

When cortisone is administered for cancer of the prostate in remission, it should be used with an initial dosage of 200 to 300 mg. daily, later holding at a maintenance dose of 100 mg. daily. However, since cortisone produces considerable sodium retention, prednisone is probably better, employing an initial dose of 40 to 60 mg. and a maintenance dose of 20 to 40 mg. daily. Antacids should be used with these drugs to reduce the likelihood of peptic ulcer.

Hypophysectomy may be tried as a last resort in prostatic cancer which is becoming resistant to hormonal therapy. We have used it ourselves in only a few cases and without noteworthy results.

Besides these procedures, many other drugs may be used in progressing cancer of the prostate. Probably the best of these is diethylstilbestrol diphosphate (Stilphostrol), 1 gm., which is administered in 500 cc. of 5 per cent dextrose in distilled water as an intravenous drip. This should be given quite slowly, as fast administration usually results in sensations of perineal heat, probably from concentration of the drug in the prostate. It is used daily for five to ten days as an initial dose and then should be given every month, 1 gm. daily for five days.

Chemotherapy, using cyclophosphamide (Cytoxan), nitrogen mustards, 5-fluoro-uracil, 6 mercaptopurine, and other similar drugs, has been of debatable value.

Radiation therapy has been worthwhile in some instances but should be used judiciously. Cancer of the prostate is a relatively radioresistant tumor, but adequate dosage will sometimes produce regression of the lesion. In treatment of metastases of prostatic carcinoma, deep x-ray therapy is directed to individual lesions in the bone, or intravenous injections of radioactive phosphate are given. A dose of 2,000 to 3,000 r is usually considered an adequate amount of deep x-ray therapy for individual bone lesions, and marked relief of pain from the area irradiated can be expected. We have found this type of therapy particularly useful in prostatic disease metastatic to the hip when weightbearing has been interrupted because of severe pain. However, one should use such therapy cautiously, since sometimes pain is a protective mechanism which shields weak bones with thin, easily fractured cortices.

Radioactive phosphate (P^{32}) may be given either orally or intravenously, although intravenous injection is usually preferable. The activity of P^{32} depends on the increased uptake of P^{32} by embryonic or neoplastic tissue. It seems to concentrate principally in the prostatic lesions of bone, where its soft beta rays are able to irradiate the metastatic areas without seriously affecting the hematogenous tissue. When radioactive phosphate is used, estrogens are discontinued, as are steroids, and testosterone is begun in order to increase the percentage of P^{32} uptake. Shortly after administration of the isotope, pain should be relieved and improvement should be apparent.

Along with the measures described, which can be considered as specific for treatment of cancer of the prostate, other nonspecific measures should be used. Anemia is usually much more severe than would be expected from the radiologic appearance of the bone or from the bone marrow biopsy hemogram. In our opinion, the reason for the severity of the anemia has not yet been demonstrated. However, such anemias respond quite well, albeit temporarily, to transfusion of whole blood. Iron given orally also seems to be of benefit.

Vesical outlet obstruction is frequent in cancer of the prostate, generally occurring rather late in the disease. Obstructive symptoms may be severe, but they often respond to hormonal or antihormonal therapy. When such response is not adequate or when the obstruction has developed while the patient is on therapy, surgical intervention is necessary. Transurethral resection of the prostate is almost always the choice, regardless of the size of the tumor. It is virtually impossible to enucleate the prostate by any route when the tumor has become invasive. When transurethral resection cannot be done, usually a suprapubic cystostomy tube or urethral catheter must remain to drain the bladder.

In transurethral resection of invasive prostatic carcinoma, no attempt is made to remove all the tumor and the resection is necessarily limited. However, attempts are made to remove all obstructing tissue at the neck of the bladder or within the prostatic urethra. These tumors usually are not very vascular and there is little tendency to bleed during transurethral resection. Occasionally, even though adequately resected, tissue will regrow into the prostatic urethra and obstruction will recur. In this event, a second transurethral resection may be necessary.

When pain is so severe that it cannot be controlled by other methods, such procedures as presacral rhizotomy and cordotomy are sometimes used.

Apart from the above, the usual supportive treatment used in any malignancy is indicated. Good diet, plenty of rest, and, especially, good rapport with the physician who cares for the patient in his last great illness are probably as important as any more specific therapy.

CONCLUSION

An attempt has been made to simplify and summarize the diagnosis and treatment of cancer of the prostate. Treatment of this extremely complex neoplasm involves the knowledge and use of several skills. Prostatic cancer is one of the few tumors which responds well to palliation, but the mechanisms in this response are truly unknown. Much research is being carried out and much more is needed to explore the various facets of this disease. Despite research, explanations, and theories, the problem of cancer of the prostate cannot be solved, nor can the rate of cure be raised, except through the efforts of the general practitioner who sees these patients first. Only through the patient performance of many routine rectal examinations can early, curable cancer of the prostate be found or even suspected. The percentage of patients with Stage II cancer of the prostate diagnosed in a community is a direct measure of the number of rectal examinations performed in that community and is, in part, a measure of the quality of the community's medical care.

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PROGNOSIS IS IMPROVED in bacteremic shock due to gram-negative enterobacilli when recognition and treatment are prompt. In early stages the patient may be alert and restless, with fever, flushed skin, and full, bounding pulse; only hypotension is a clear indication. The later, more characteristic signs are pallid complexion, cold, damp extremities, collapsing veins, feeble pulse, and sometimes a fall in temperature. Renal and hepatic disease and arteriosclerosis are predisposing causes and appear to hinder recovery. Incidence is high in patients with malignant disease, some hematologic diseases, and diabetes mellitus. Predisposition to shock can come from genitourinary or gastrointestinal tract operation, adrenal steroids, antibacterial agents, antimetabolites, and irradiation. Early, empirical therapy consists of a combination of streptomycin and tetracycline. The regimen can be changed if improvement fails to follow or if blood cultures demonstrate organisms more susceptible to other drugs. Supportive measures include oxygen therapy, elevation and bandaging of the legs, hypothermia, and hemodialysis.

W. J. MARTIN: Bacteremic shock due to gram-negative enterobacilli. Minnesota Med. 45:1013-1021, 1962.

DEEP HALOTHANE (Fluothane) anesthesia apparently depresses the myocardium, and notable decreases in cardiac output and stroke volume and a rise in central venous pressure occur. During light anesthesia, the reduced cardiac output is caused chiefly by a decrease in heart rate. As anesthesia deepens, further reduction in output results in decreased stroke volume. Changes in cardiac output are roughly followed by changes in mean arterial pressure. Total peripheral resistance is not appreciably altered during light halothane anesthesia but increases during deep states. With both controlled and spontaneous respiration, central mean venous pressure rises with increased depth of anesthesia, but evidence of circulatory depression is more apparent in controlled respiration. Patients with high arterial pressures show greater hemodynamic changes. The circulatory effects of halothane were studied in 10 adult patients, using preoperative medication, induction of anesthesia with intravenous thiopental sodium, and halothane vaporized with nitrous oxide and oxygen.

F. M. WENTHE, R. T. PATRICK, and E. H. WOOD: Effects of anesthesia with halothane on the human circulation. Anesth. & Analg. 41:381-390, 1962.

Pectus Excavatum

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Although pectus excavatum (funnel chest) is a relatively uncommon deformity, it is a condition that I see with increasing frequency, and one upon which I operate with decreasing frequency, each year.

The depression of the chest to form a funnel-shaped cavity involves the lower part of the sternum, with the point of greatest depression at the lower end of the gladiolus (figure 1a). The cartilage and bone of ribs 3 to 8 usually are involved to varying degrees, with protrusion and angulation of the ribs and sharp angulation of the lateral portions and marked depression of the medial portions of the cartilages. The depression of the cartilages is usually asymmetric. The sharper angulations occur more frequently on the right side, with a deeper depression that tapers off toward the left nipple area and may even end in a fullness caused by the shift of the heart into the left side of the thorax. The xiphoid process protrudes sharply from its depressed position as the abdomen projects in a potbellied appearance. This deformity could be hidden with clothing except for the poor posture and marked kyphosis usually associated with it.

The etiology is unknown. Intrauterine compression, diaphragmatic traction, abnormal overgrowth of the ribs, metabolic deficiencies, and obstruction of the upper part of the respiratory tract all have been incriminated. There appears to be an increased incidence of pectus excavatum in cases of Marfan's syndrome. Since a generalized mesodermal dystrophy has been considered to be the etiology of Marfan's disease, it is possible that a similar defect may play a part in pectus excavatum. Ochsner and DeBakey[1] stated that the anomaly is an inherited dominant characteristic in some families, but the incidence of multiple cases of a marked nature in a single family has not been impressive in my own experience. It is possible that this is a congenital defect but, since so many infants with this condition have shown gradual improvement, it appears that this condition also might be developmental.

Until undressed, children with this deformity show little of note except for poor posture and generally asthenic appearance. When the clothing is removed, the depression is evident and usually exaggerated by protuberance of the abdomen. In the overwhelming majority of cases this condition is without symptoms other than the emotional response to the cosmetic defect.

Parents report an unusually high incidence of recurrent infections of the upper part of the respiratory tract, bronchitis, and general poor health. Poor appetite is frequently mentioned and inability "to keep up" with the other children is often attributed to this condition by the parents. The symptoms that older children mention are shortness of breath, on running, and pounding of the heart. Infrequently pain in the chest, left shoulder, and arm is reported. This has been attributed to the torsion of the heart with kinking of the great vessels. It is usually difficult to assess these subjective complaints since these children are self-conscious, usually thin, and not prone to strenuous physical activity and competition.

The symptom leading to medical consultation almost always is due to the cosmetic appearance of the wall of the chest. Naturally, the geographic location and the seasonal sports of that area will greatly influence the parents in their pursuit of treatment. Any area where swimming is a leading pastime will tend to produce more patients with symptoms and consequently more reports of surgical corrections. This seems to be confirmed by the fact that a larger series of cases were reported from Australia[2] than from England.[3] It has been said that youngsters who are sufficiently conscious of this deformity to avoid appearing in bathing trunks should be offered surgical treatment as a matter of course. In a land of sunshine, this easily may be true.

Roentgenographic studies show little that cannot be predicted from physical examination. The chest is widened in the transverse dimension and narrowed in the anteroposterior dimension, and the heart usually projects well into the left hemithorax (figure 1b and c).

Cardiae studies and controlled studies of pulmonary function have not been reported in large

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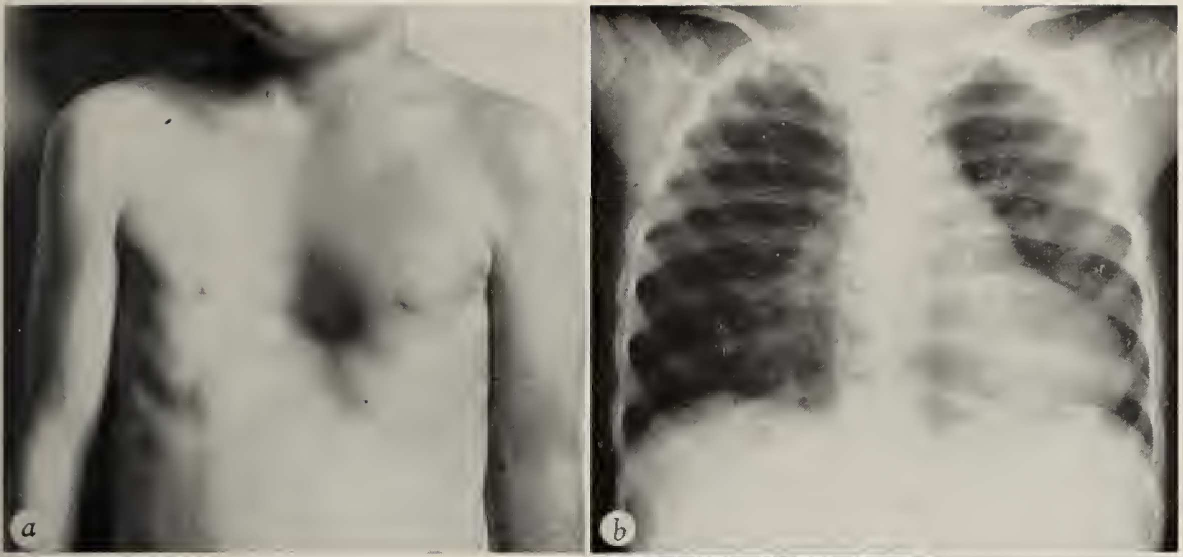

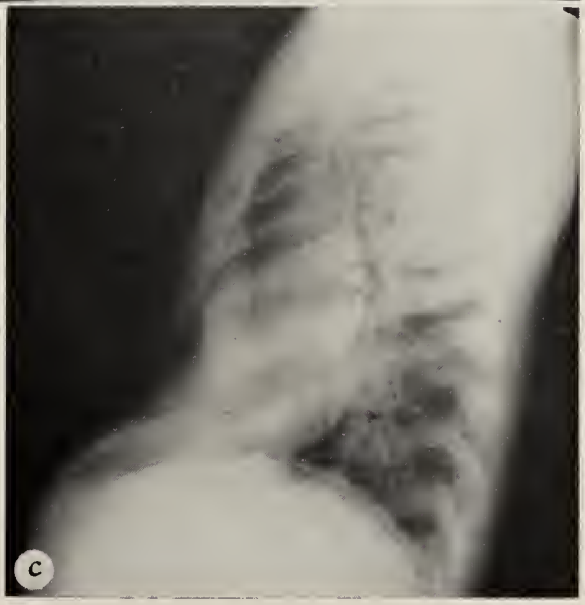

Fig. 1. Pectus excavatum deformity. *a* Asymmetry of angulation of ribs and rib cartilage with prominence in the area of the left nipple produced by shift of the heart. *b* Anteroposterior view showing marked shift of the heart into the left side of the thorax. *c* Lateral view showing depression of sternum and remarkably short distance between sternum and vertebral bodies

preoperative and postoperative series.[4] The incidence of systolic murmur is reported to be higher in this condition than in the normal population. Changes in electrocardiographic patterns have been largely those associated with the shift of the heart into the left side of the thorax with some degree of rotation. However, since the deformity itself sometimes makes the placing of precordial leads difficult, this finding may not be of significance. In reviewing the reports, one gains the impression that, with the exception of the most severe cases, this deformity usually does not produce a crippling condition through its alteration of the cardiac and respiratory systems.

INDICATIONS FOR SURGICAL TREATMENT

In the vast majority of cases the only indication for surgical treatment is the correction of the deformity for cosmetic, and thus psychologic, reasons. While heart failure has been reported to be relieved by operation[5] and symptoms such as pain in the shoulder and arm, dyspnea, and palpitations have been relieved, the results usually can be evaluated in direct relationship to the appearance. Occasionally the patient receives unexpected benefits from the operation. I have had a patient return for a follow-up visit delighted to be free of a pain in his left arm and hand that he had never mentioned previously. He volunteered the information that it was gone, and, when asked why he had not told us about it before the operation, he looked puzzled and said he had not known he had it until it was not there any more.

While the incidence of this deformity actually is probably equally distributed between men and women, more men seek surgical treatment. Ochsner and DeBakey[1] reported 4 men to 1 woman. The indications for surgery in women are hard to define. The option of wearing bathingsuit tops with or without padding, the infrequency of strenuous athletic endeavors, and the accentuation of the normal maturing breast tissue by this sternal depression seem to eliminate the majority of reasons for operation. Naturally, the presence of definite symptoms referable to the respiratory or cardiac systems

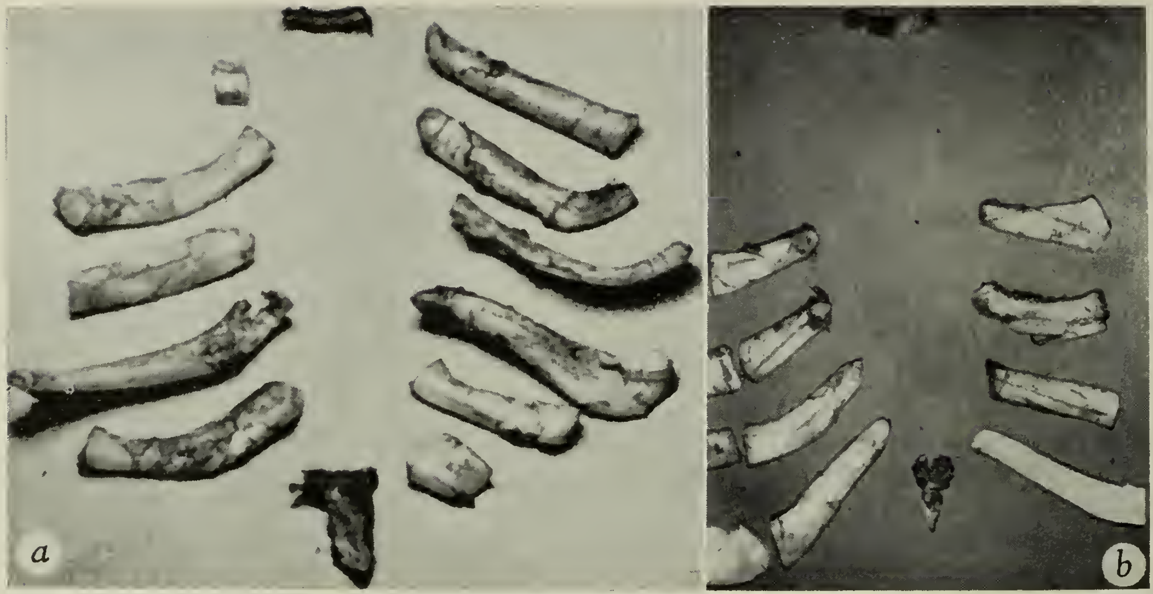

Fig. 2. *a* Specimens removed in routine operation, including all deformed cartilages, xiphoid process, and wedge osteotomy of outer plate of sternum. *b* Specimens removed from patient in whom deformity extended beyond the cartilages and required subperiosteal stripping of the ends of the ribs of the right side

would argue as much for operation in the woman as in the man.

The last female patient on whom I performed an operation was a 7-year-old whom I had observed for almost three years, quite confident that an operation would not be required. This young lady's desire for surgical treatment was based on the fact that her mother and younger sister could wear sweaters with lockets suspended from long chains around their necks while she thought she could not. Finally an operation was performed and her evaluation of the result was evident when she returned for a checkup wearing a sweater with her heart-shaped locket resting proudly against her little sternum.

OPTIMAL AGE FOR SURGICAL TREATMENT

Much has been written in support of early surgical correction of this condition. An operation of limited scope was advocated for relief of pectus excavatum in infancy and was widely employed for a few years.[6] This early operation for division of the so-called central tendinous attachment of the diaphragm to the xiphoid process (and limited rib resections) has not withstood the test of time and is no longer advocated. It is so difficult to evaluate the excursions of the pliable ribs and sternum of the infant that it seems wiser to observe them until evidence of more permanent deformity is present.

In all probability the optimal age for surgical correction is between 3 and 5 years. By this time, the deformity should have become more definite and the patient is sufficiently large and vigorous to show any favorable response to exercise and systematic calisthenics with increased intrathoracic pressure. At this age there also would be sufficient time for convalescence and adjustment before entering school in the event that surgical treatment is undertaken.

Practically every parent who seeks a surgical opinion is quite ready to accept an operation or could easily be so persuaded. It has become my policy to temporize in most cases and to encourage a parent to enter into a series of exercises

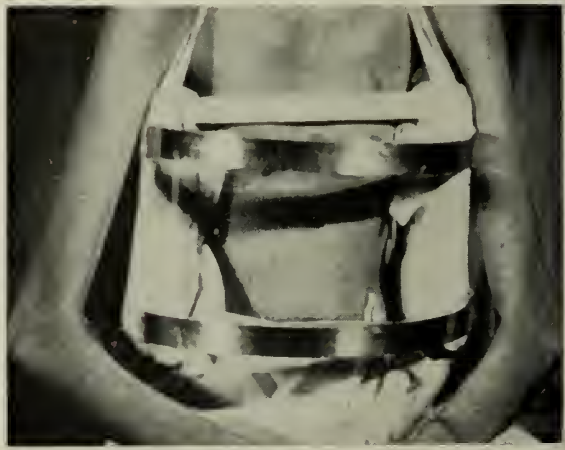

Fig. 3. A type of protective guard

with the child. Chinups, pushups, swimming, and similar exercises all appear to have some beneficial effect, but cooperation of a parent is required.

This optimal age is also the period at which one most often finds the mouth breather with hypertrophied lymphoid tissue, tonsils, and adenoids; these conditions must be evaluated and treated. It is my opinion that this partial obstruction of the respiratory passages may be a contributing factor and should be corrected or controlled before the reconstruction is undertaken. Certainly laryngeal or tracheal stenosis could reproduce the paradoxical respirations during a period of agitation.

OPERATION

Many technics and appliances have been advocated in the fifty years during which reconstructive operations for this condition have been attempted. The operations have ranged from the simple one of passing a bistoury behind the xiphoid process to separate it from the diaphragmatic attachment to the more complex ones, such as resection of ribs or reversal of the sternal plate, all with or without some form of internal or external fixation.

In my experience, mobilization of the sternum by means of subperichondral stripping of the deformed rib cartilages and wedge osteotomy of the outer plate of the upper part of the sternum is adequate without any prosthetic devices for traction or fixation (figure 2a). Occasionally subperiosteal stripping of the ends of some ribs (figure 2b) is necessary in order to adequately correct the deformity. (The dense adhesions of the sternum and ribs to the anterior mediastinum, which have been described by many authors, have not appeared to me to be sufficient to cause the condition since they have separated so easily.) The xiphoid process is removed. While some protective device, in the form of a protective shield or corset (figure 3), may be warranted to avoid trauma to the chest during the convalescent period, this usually is not necessary. In fact, the expansion of the lungs by deep breathing and activity is probably the best way of ensuring correction of the deformity during the healing state.

After removal of the suction tube, on the second to the fourth day, the patient is urged to be up and about as much as possible (figure 4). The deep-breathing exercises are continued but no attempt is made to start chinning and pushup exercises until the patient has been out of the hospital for at least one week (eighteen to twenty-one days after operation).

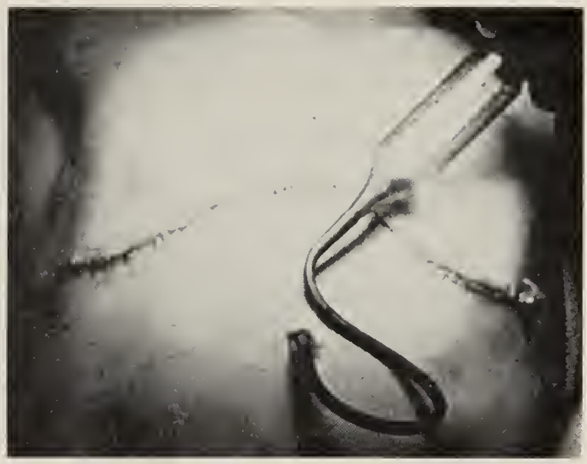

Fig. 4. Postoperative patient showing catheter passing into the retrosternal space and slip drain at margin of wound

COMPLICATIONS

The mortality should be almost nil in this procedure, but there is always the possibility of unusual reaction to drugs and anesthetic agents. Infection is the chief concern and coverage with broad-spectrum antibiotics should be routine. The use of soft-rubber suction catheters and slip drains for a brief period to evacuate serum and eliminate dead space usually is wise.

RESULTS

Except for several unsightly scars in my early patients, when the vertical incision was used, the results have been gratifying, particularly to the patient and the parents. While the transverse incision seems much better, there is no great objection to the vertical incision in the male patient, provided it is not carried above the level of the third rib. Even in one patient with a result I could not classify as better than "fair to poor," the family was enthusiastic not only about the cosmetic result but even the change in the patient's activity and emotional outlook. A happy, confident child eats better, participates more freely in play and sports, and becomes generally more sociable. Patients who have achieved a good result are very satisfied patients.

In fact, if there is any lesson to be learned from a review of these cases, it is that the final result seems to be satisfying out of all proportion to the correction achieved and this may lead the enthusiastic surgeon beyond the bounds of prudence.

SUMMARY

Pectus excavatum is an uncommon deformity, whose etiology is not clear. The great majority of patients are without symptoms except for cosmetic aspects. In view of this, surgical correction seldom should be performed on women. It seems worthwhile to have the patient undertake exercises to promote the development of muscles and the expansion of lungs during the period of observation. The optimal age for operation is between 3 and 5 years. Subperichondral stripping of all deformed rib cartilages and rib ends, removal of the xiphoid process, and osteotomy of the upper part of the sternum without fixation prostheses seem adequate. The results appear gratifying out of porportion to the skeletal correction obtained.

This paper was presented at the meeting of the Northwestern Pediatric Society, Minneapolis, Minnesota, on October 5, 1962.

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Editor's Note: In the article "A Multiphasic Screening Project on the Pine Ridge Indian Reservation," December 1962, sentences two and three of paragraph four, on page 511 which read:

> "The infant mortality rate (average 1957-59) was 90 per 100,000 population. This compares with an infant mortality rate of 54 deaths for all Indians on reservations in 24 states and 27 deaths per 100,000 population for the United States as a whole."

should be changed to read:

> "The infant mortality rate (average 1957-59) was 90 per *1,000 live births.* This compares with an infant mortality rate of 54 deaths for all Indians on reservations in 24 states and 27 deaths per *1,000 live births* for the United States as a whole."

Correction of Experimental Aortic Insufficiency by Formation of Intima Valve in Descending Aorta

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In spite of considerable advances in treating aortic valve stenosis, the problem of correcting insufficiency of this valve has not yet been solved.

The present means of treatment can be divided into 2 main groups: (1) methods where correction of aortic insufficiency may be achieved by operation on the aortic valve or on the ascending aorta directly (Baily, 1955; Lillehei, 1960; Müller, 1954; and others) and (2) operation on the descending aorta (Hufnagel, 1954; Mulder, 1960; Castro-Villagrana, 1958; and others).

The best method is undoubtedly an immediate operation on the aortic valve or on its fibrous ring. Such operations, however, being in most cases connected with the application of artificial blood-circulatory apparatus, are rather complicated and death too often results. Prosthetic appliances and formation of artificial valves in descending aorta are less complicated, with correction of the insufficiency ranging to 75 per cent (Kirklin, Ellis).

The purpose of this paper is to work out a method of correcting experimental aortic insufficiency by making an autovalve of intima in the descending aorta and evaluating the changes that take place in it and the influence of the newly formed valve on the hemodynamics of the organism.

The intima valve method was first introduced by Castro-Villagrana and Sisteron in 1957.

The exfoliated intima and the inner third of the middle aortic layer are sustained at the expense of osmosis of the vessel lumen nourishing substances, as proved by MacLeechy in 1952, Kirk and Landers in 1959, and Lamzig in 1959.

METHOD

Experiments on 43 dogs weighing from 10 to 30 kg. were conducted in 4 groups.

In 5 tests of the first group, the intima valve was formed without preliminary aortic valve insufficiency.

In 28 tests of the second group, the artificial valve was formed immediately after creating a valve insufficiency.

In 5 dogs of the third group, the valve was formed at different periods after having preliminarily created such disorders. The remaining 5 dogs were subjected to a series of control tests in which we produced only aortic valve insufficiency.

With the aid of morphine and barbamil anesthetics and intratracheal introduction of oxygen, the chest was sectioned along the fifth intercostal space on the left side; using the blunt knife method, the left subclavian artery was isolated from the aortic arch to the deviation point of the left vertebral artery. Then the descending aorta was mobilized from the starting point up to the diverging point of the third pair of intercostal arteries.

Limited defects in aortic valve folds were accomplished by an apparatus suggested for this purpose by the authors. It consists of a hollow tube with an arc-curved end with a knife in it, acting according to a reverse-punch principle.

The instrument was inserted into the space above the valve under the control of the finger. With the help of this device a large opening to the extent of 12 sq. mm. was punched out in the right posterior noncoronary fold of the aortic valve.

In order to produce the valve, the descending aorta was clutched by the 2 Γ-shaped clamps, both at the subclavian artery and at the diverging point of the second pair of intervertebral arteries, and then resected longitudinally to

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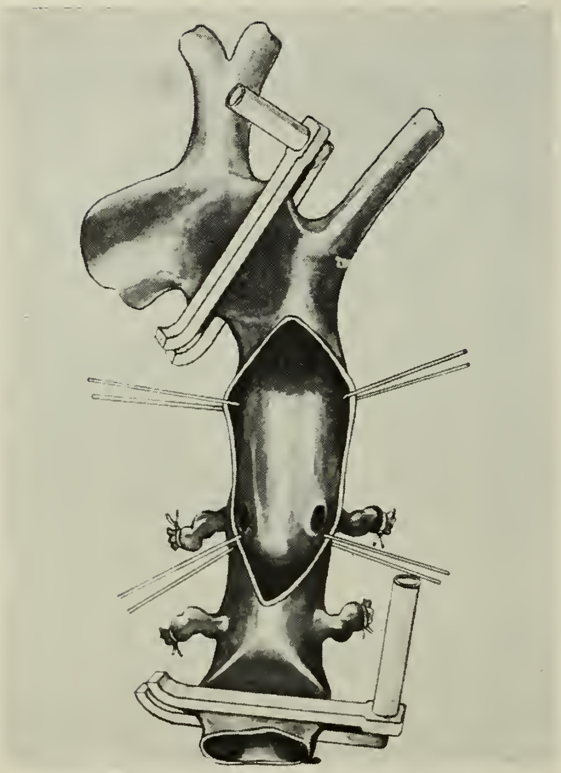

Fig. 1. Suturation of the edges of the descending aorta

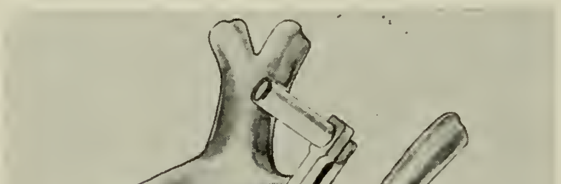

Fig. 2. Resection of the aorta with a continuous 1-row stitch

the length of 3 to 3.5 cm. Its edges were sutured with thick silk and parted (figure 1). At the opening of the first intervertebral pair of arteries, a shallow transversal resection of the aortic intima was made for a length measuring three-fourths of its circumference. By means of a curved, narrow-spouted clamp, the intima was proximally exfoliated to a depth of 1.5 of the aortic diameter. The sides of the newly formed valve were sutured to the aortic wall by ∏-shaped stitches. After that, the resection in the aorta was sutured by means of a continuous 1-row stitch (figure 2).

To avoid narrowing at the site of resection, while stitching, we drew the outer and middle aortic layers into the stitch without perforating the aortic wall.

After suturing the wound in the aortic wall, we removed the peripheral clamp and, after that, during the next three to four minutes, we removed the control clamp. This enabled us to prevent an abrupt drop in the arterial blood pressure and avoid mortal fibrillation. The wound in the chest was sutured layer upon layer.

To confirm aortic insufficiency and to determine the functions of the newly formed valve, we measured the blood pressure in the femoral and carotid arteries, determined the pulse blood pressure curve, and made electrocardiograms, phonograms, and, in some cases, retrograde aortograms.

DISCUSSION

Four dogs in the first group withstood the operation quite well and were sacrificed at different periods of from three to twelve months. One died of pneumonia on the third day.

At autopsy of animals in that group, it was found that the newly established valve did not function at all but gradually turned into a sclerosed fold, which provoked acute stenosis of the aorta.

Out of 28 dogs in the second group, 12 were sacrificed at different periods of from one week to twelve months; 2 were kept for further investigation; and 14 died (9 of them on the operation table or on the first day after the operation—primarily from extensive aortic insufficiency, 3 from pneumonia on the fifth day, and 2 from pleural empyema on the twentieth day after the operation).

After an acutely dosed aortic pressure had been induced, we noticed an abrupt elevation of the pulse blood pressure (figure 3). It should be noted that this was mostly due to a lowering of the diastolic pressure, while the systolic pres-

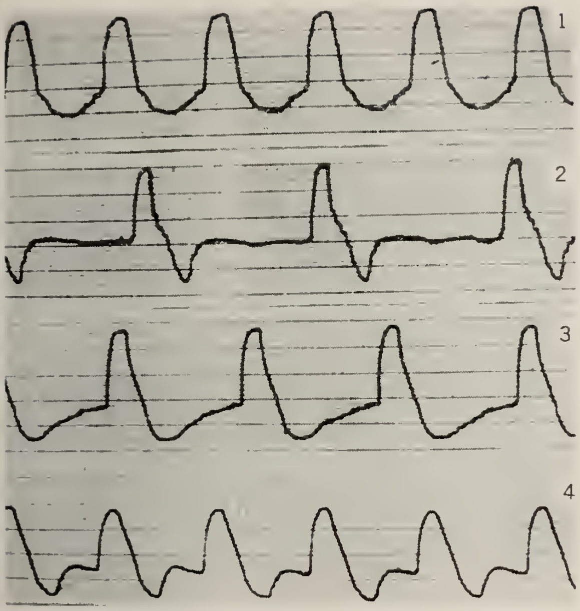

Fig. 3. The dog's pulse blood pressure curve (1) before operation, (2) after thoracotomy, (3) after producing defect in the aortic valve fold, and (4) after the correctional operation

sure usually remained practically unchanged. Simultaneously, the form of the pulse curve also changed. It was a characteristic curve of aortic insufficiency with an abrupt, anacrotic elevation, a bifurcated peak, and a diminishing dicrotic wave that became hardly visible.

The phonogram usually detected diastolic murmur by the end of the operation or on the next day.

Retrograde aortography of the animals with aortic insufficiency (without correction) revealed the reflux of the contrast medium out of the aorta into the left ventricle. The extent of the reflux had a direct connection with the extent of the valve defect. It should be noted that the contrast medium that passed into the left ventricle was evacuated from it only during the next 4 to 6 systoles.

After production of the artificial intima valve, the pulse pressure in the descending aorta, taken from the femoral artery, abated considerably; the amplitude of the pulse curve sharply decreased, bifurcation at the peak disappeared completely, and the dicrotic wave reappeared.

Especially demonstrative was the function of the newly formed valve when examined by means of roentgen ray contrast medium. It filled up well and did not permit the medium to rise above its own limits. Only when there was a defect at the base of the valve was the medium able to leak through. It is interesting to note that the fluctuating time limit of the roentgen ray contrast fluid had sharply diminshed in the ascending aorta after the formation of the valve. This was also an indication of its proper functioning.

Out of 5 dogs in the third group with previously created artificial insufficiency, 1 died of pleural empyema fifteen days after the corrective operation; 3 were sacrificed after periods of from one to five months; and 1 was left for further follow-up.

Out of 5 dogs in the fourth group (with defects of valve cusps measuring 12 sq. mm. and 24 sq. mm.), 4 perished of left ventricle insufficiency. Only 1, with an opening in the valve of 4 sq. mm., survived and was sacrificed three months later. At autopsy of the animals of the second group twelve months later, we noted that the newly created valves were elastic, with a smooth inner surface and no signs of thrombosis or any deformations.

Seven months later, by microscopic examination, the valve cusp proved to be a duplication of the aortic wall, having fully preserved its elastic structures. The inner surface of the valve was covered with endothelium on the delicate membrane. The loose edge was rounded. Elastic structure of the new valve was fine and delicate, with chaotic arrangement of the fibers.

SUMMARY

1. The valve formed in the descending aorta completely corrects the aortic insufficiency in its lower parts.

2. The valve cusp duplicates the structure of the aortic wall, with complete maintenace of elastic fibers, and its inner surface is covered with endothelium upon the delicate membrane.

The authors wish to thank Dr. A. M. Khilkin of the Department of Operative Surgery and Topographical Anatomy for his co-operation and encouragement in preparing this manuscript.

Stroke Volume Nomogram

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and HAROLD MARGULIES, M.D.

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CARDIAC output in man is easily determinable from the heart rate if the corresponding stroke volume is known. An equation for stroke volume in terms of age and systolic and diastolic blood pressure, developed statistically by Starr and associates,[1,2] has been verified independently by Likhnitskaia and associates.[3] In connection with recent cardiovascular studies,[4,5] the authors have developed a simple nomogram for stroke volume based on Starr's equation.

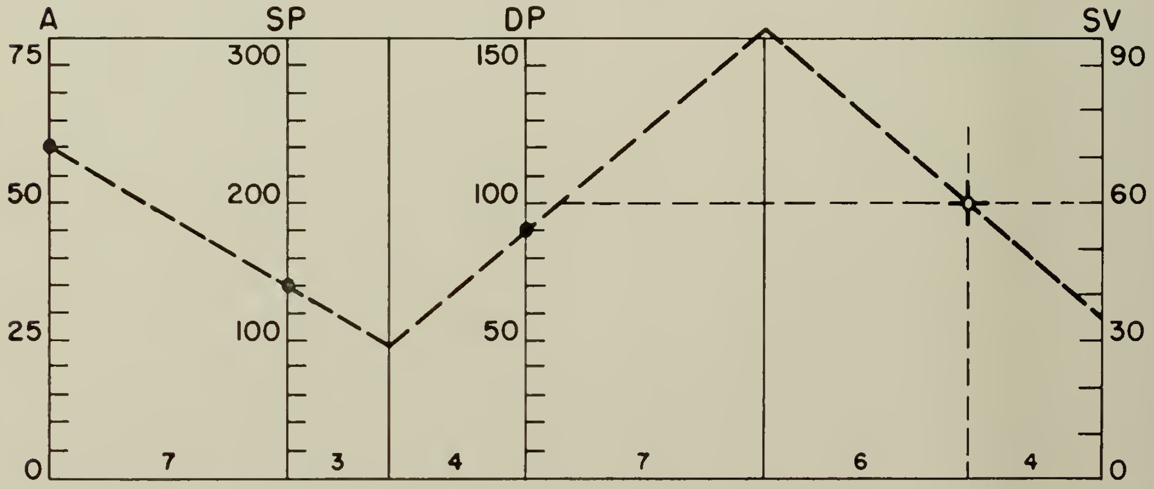
The nomogram is shown in the figure, together with the equation and definitions of its symbols. The A, SP, DP, and SV scales are vertical and start with zeros at the bottom horizontal line. The points at A=75, SP=300, DP=150, and SV=90 all lie on the same horizontal line. The spacings between the vertical lines are indicated, in arbitrary units, by the numerals along the bottom horizontal line. It will be noted that there is a nonscaled vertical line located at 3/7 the distance from the SP scale to the DP scale, and another nonscaled vertical line located at 7/17 the distance from the DP scale to the SV scale. Finally, an index point is located at the intersection of a horizontal dashed line (from DP=100 to SV=60) and a vertical dashed line (located at 13/17), the distance from the DP scale to the SV scale. By use of these criteria, the nomogram can be reproduced locally to any desirable size and need.

Stroke Volume Nomogram

Starr's Equation $SV = 100 - 0.6\,A + 0.5\,SP - 1.1\,DP$

DP = Diastolic Pressure (mm. Hg), SP = Systolic Pressure (mm. Hg)

A = Age (years), SV = Stroke Volume (ml.)



Dotted lines show case for blood pressure of 140/90 at age 60.

VICTOR W. BOLIE *is chairman of biomedical electronics, Iowa State University, Ames.* JOHN E. GUSTAFSON *is director of the United Heart Station, Iowa Methodist Hospital, Des Moines.* HAROLD MARGULIES *is visiting associate professor of medicine, Indiana University Medical Center, Indianapolis, and acting professor of medicine and chief of party, Postgraduate Medical Center, Karachi, Pakistan.*

The use of the nomogram to obtain the stroke volume from age and systolic and diastolic blood pressure is a simple procedure, as illustrated by the funicular dotted line. First, the appropriate points should be marked on the A, SP, and DP scales. Second, the straight line joining the A and SP points should be extended to the first nonscaled vertical line. Third, a straight line from this intersection is extended through the DP point to the second nonscaled vertical line. Fourth, a straight line from this second intersection is extended through the index point to the SV scale, which gives the stroke volume.

This work was undertaken with the support of the Hartford Foundation.

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LONG-TERM survival is relatively good in patients receiving large doses of radiation for carcinoma of the cervix. Dosage of 3,000 r is delivered to the midpelvic area over about twenty-eight days with a 400-kv. machine and cobalt. Applicators containing 50 mg. of radium, inserted on the last day of therapy in the cervix, uterus, and upper vagina, are left in place for one hundred hours. For 1,178 patients treated by irradiation, the five-year survival rate was 81.3 per cent in those with stage 1 lesions, 60.1 per cent with stage 2, 35 per cent with stage 3, and 3.4 per cent with stage 4. Primary tumors developed in 55 patients after irradiation, usually in the breast; irradiation may have been the cause in 2 patients. Radical operation was more effective than irradiation for recurrent tumor.

E. L. MAKOWSKI, J. L. MC KELVEY, G. W. FLIGHT, K. W. STENSTROM, and D. G. MOSSER: The results of irradiation therapy of carcinoma of the cervix. J.A.M.A. 182:637-642, 1962.

SUBCUTANEOUS FAT NECROSIS developing during the first week of life may indicate hypercalcemia, although secondary symptoms—failure to thrive, vomiting, poor weight gain, and recurrent fever—frequently are not apparent until 3 to 6 weeks of age. Serum calcium values also may remain normal for more than two weeks after the necrosis appears. The necrotic lesions may be widely dispersed over the trunk and extremities or localized on the back. Extensive involvement usually is encountered after a long, difficult labor, with delivery of a large infant needing resuscitation. Exactly when subcutaneous calcification occurs is unknown, since roentgenograms may not reveal small lesions. Rapid recovery follows treatment with corticosteroids, a low-calcium diet, and a halt to vitamin D intake.

A. F. MICHAEL, JR., RICHARD HONG, and CLARK D. WEST: Hypercalcemia in infancy. Am. J. Dis. Child. 104:235-244, 1962.

Tuberculosis Detection at Harvard University

A Program for Students, Faculty, and Staff

ORRIN LEVIN, M.D.

Cambridge, Massachusetts

This health service is determined to use every proved control measure to eliminate tuberculosis from the college campus. With this as our goal we have set up a case-finding program directed toward the total university community: students, faculty members, and administrative and service personnel. Its plans and organization allow for the program to go on from one year to the next.

Students who have never been exposed to tuberculosis are coming to our college each year in increasing numbers. We rely heavily on the tuberculin test to give them maximum protection. As a screening test for identifying those infected by the tubercle bacillus, it has no equal. Its use cuts down the x-radiation usually required for screening for tuberculosis. It is safe, reliable, readily available, and internationally understood by medical and lay people alike.

This program protects the uninfected by uncovering sources of disease. One source is the fellow student, instructor, or faculty member with an unrecognized case of tuberculosis. Another is the case of arrested pulmonary disease which we follow closely for evidence of reactivation of disease.

The advantages for health education offered by such a control program on the college campus must not be overlooked. We are continually explaining the significance of a positive tuberculin test. To the nonreactor this information is reassuring. To the reactor, it serves to alert him to the need for good health practices and for regular medical and roentgenographic examinations. Such a program raises the level of interest in tuberculosis and its control measures. It provides statistical information that helps us recognize changing patterns of incidence of infection at the university level.

For maximum effectiveness we incorporate our tuberculin skin testing program into the health services as a basic medical and organizational procedure. We do this by taking every opportunity to record a reaction to intradermal tuberculin.

The opportunity for members of the student body to have tuberculin tests presents itself in many ways. A complete physical examination that includes a tuberculin test is given every new student entering the university, students returning after a leave of absence of a year or more, all students entering the graduate schools, students applying for work or for scholarships, and those entering special fields such as the ministry, medicine, education, nursing, and government services overseas. Students presenting diagnostic problems who were previously tuberculin-negative are given a second test as part of their medical check-up. Students who have a history of clinical tuberculosis, those who are known to have been tuberculin-positive in the past and those we find tuberculin-positive are required to have a chest roentgenogram made.

Faculty members and all other school personnel are required by state law (Chapter 723, Acts of 1950, General Laws of Massachusetts) to submit to an examination to determine whether or not they have tuberculosis in communicable form. Under the terms of this law, school personnel are required to be examined prior to employment and every three years thereafter. A chest roentgenogram is required only when the tuberculin test is positive (Chapter 15, Acts of 1958, General Laws of Massachusetts).

Notification is sent from the office of the secretary of the Harvard Corporation to all new faculty members and to those due for their three-year check-up. It explains the significance of the tuberculin test and the importance to all positive reactors of having a chest roentgenogram. The letter concludes with the following statement: "It is incumbent upon the University to discontinue employment of members of the staff who fail to comply." (We encounter no lack of willingness to cooperate in this program.)

Physical fitness and proof of freedom from

ORRIN LEVIN *is physician to the Harvard University Health Services and coordinator of the Faculty and Employee Health Survey.*

tuberculosis in communicable form are conditions for employment of all service and administrative personnel by the university. We try to make participation in our tuberculin case-finding program convenient and pleasant. The scheduling of tests is made flexible to accommodate all groups of students, faculty, and employees.

The tests are carried out by a few people with experience and skill. Our methods and materials are subject to continuing criticism, and changes to improve our technics and effectiveness are readily made. Emphasis is placed on accuracy and uniformity, since both are necessary if our results are to be meaningful. The Mantoux intracutaneous method for performing the tuberculin test is currently preferred to the Heaf multiple puncture test and its modification, the Tine test (Rosenthal). A solution of 0.1 cc. of purified protein derivative containing 5 tuberculin units is injected with a short, sharply beveled, 25-gauge steel disposable needle attached to a plastic disposable tuberculin syringe. The test is read within forty-eight to seventy-two hours. Induration, the hallmark of a positive reaction, is measured and recorded in millimeters. All positive and doubtful reactors are given chest roentgenographic examinations.

Record keeping is vital to this program. A report form for our special purpose was obtained from a national business form company. It is simple, convenient, easy to fill out, and contains all the information we presently regard as pertinent, with ample space for changes. An alert, well-trained secretary is assigned to keep the system up to date. She checks the completed forms for accuracy and omissions. Space is provided for the complete chest roentgenographic reports. All findings are finally marked on the forms by punching holes arranged around the card. This makes data analysis easy and readily available.

The student health physician is uniquely situated in the all-out battle for the total elimination of tuberculosis. His promotion of the principle of and means for the continuous surveillance of the university community will increase the likelihood of reaching this objective. We therefore urge that college health services incorporate such a plan as part of their general health program.

Presented at the winter meetings of the New England section of the American College Health Association, Cambridge, Massachusetts, December 1961.

NONTROPICAL SPRUE coexistent with diabetes mellitus without exocrine pancreatic insufficiency may cause steatorrhea. Peroral intubation biopsy of the small intestine helps differentiate between sprue and steatorrhea which is a gastrointestinal complication of diabetes. The latter type of steatorrhea generally is associated with acute, long-standing diabetes, usually with autonomic neuropathy, intractable diarrhea, and other complications. Sprue may be suspected when onset of diarrhea, and presumably of steatorrhea, antedates diagnosis of diabetes. Other symptoms are long-standing diarrhea, associated with remissions and exacerbations, and lack of neurologic and vascular complications. The patient sometimes may have nutritional deficiency, which may be improved by eating a gluten-free diet.

P. A. GREEN, E. E. WOLLAEGER, R. G. SPRAGUE, and A. L. BROWN, JR.: Diabetes mellitus associated with nontropical sprue. Diabetes 11:388-392, 1962.

Notes from a Medical Journey

Velika Krsna (Serbia)
Yugoslavia
18 September, 1962

Dear Jay:

In the courtyard of the Community Hall of this Serbian village of 5,000, a dozen women, heads covered with kerchiefs, split and de-stone tiny peaches amid a litter of piles of boxes and barrels of fruit destined for a jam factory some miles away. In the entry hall are stacked scores of crates of blue plums from which slivovitz (plum brandy) will be made, while along the dusty road come little horse-drawn carts bringing more fruit to this co-operative center. But the farmers, too, are converging here, for this is the headquarters of a new epidemiologic study on cardiovascular disease, identical in methods and criteria with parallel programs that I am co-ordinating in 10 other areas in Finland, Italy, Greece, Holland, and Croatia.

The 14-man team here, under Prof. Bozidar Djordjevic and his able lieutenants, Drs. Vladan Josipovic and Thomas Strasser, began field work on September 10 and as of tonight will have covered about 500 men, aged 40 to 59, in detailed medical examinations, 12-lead electrocardiograms before and after fixed exercise (step) test using 2-channel Elema jet writers from Sweden, respiratory function tests, etc. At least 98 per cent of all the 750 men of these ages in the prescribed area will be covered (carefully!) in barely two weeks -- a prodigious effort made possible by good preparation, competent personnel, and the example of Prof. Djordjevic, himself, who sets the pace in overlong days of intensive work. We shall analyze the bloods for cholesterol in Minneapolis.

Upstairs, in "Laboriatorium II", the internists take histories and do physicals in one room and, in another, Dr. Petar Milutinovic and his associates carry out a study, new in this Serbian program, on thyroid function. The twenty-four-hour uptake of radioactive iodine (I^{131}) by the thyroid is measured in every man. This goes so smoothly that I shall propose its inclusion in the five-year follow-up studies in other areas, beginning with Dalmatia and Slavonia (in Croatia) next year.

The rest of the work is done in the big auditorium, with whitewashed walls and rough cement floors, of the Community Hall. The chemical lab, and place for bleeding (needles without syringes and without stasis), is the stage, raised 3 feet above the main level. On a bench outside the door wait the men who have come ahead of appointment, and, now and then, a woman, usually with a child, comes in to ask for medical advice. This is an extra job for the team, which, in an area with no doctor in this or in neighboring villages, inevitably must act as a sort of polyclinic -- thereby doing a service and developing good will for the program. Belgrade, with its big hospitals and medical school, is only 50 miles to the north, but rural medical service here, as elsewhere in the world, is a problem.

At the end of the month, detailed dietary studies will start here under the direction of Dr. Bozidar Simic. I hope to arrange for Dr. D. Galanos of Athens (on our Greek team) and Dr. Kurt Loebl (in Dr. Daniel Brunner's medical department in Jaffa, Israel) to observe this work, Galanos to give the benefit of his experience, Loebl to learn with an eye to application in Israel.

Everyone is working so hard, maintaining high standards but with no pause to compare the accumulating data, that it is not yet possible to say much about the local picture of disease. The team has turned up a couple of cases of previously undiagnosed diabetes and several cases of tuberculosis and nephritis. As in all our population studies, hypertension (e.g., B.P. of 160/95) is common and some rheumatic hearts are found, but heart disease is not common among these middle-aged men. However, so far, 3 definite old myocardial infarcts and several cases of angina pectoris have been found, so we may guess that the prevalence of coronary heart disease will prove to be intermediate between the high rates we find in the U.S.A., Holland, and Finland and the rarity of the condition observed in our studies in Italy, Japan, the Greek islands, and Dalmatia.

The outstanding surprise is the large number of cases of chronic bronchitis and emphysema among these farmers. We look forward to the analysis of the respiratory function tests. There is no clue as to the cause, so here is a new problem to be studied. Asthma is conspicuous by its absence. This is in contrast to some other rural areas near Belgrade.

This operation is being supported entirely by the Yugoslavs. I have contributed protocols, skinfold calipers, and E.C.G. paper and, to help at the start of the field operations, I sent here Dr. Gunnar Blomqvist of Stockholm and Dr. Henry Blackburn of our senior staff at the University of Minnesota. We shall do the cholesterol analyses and put all the data through the punch card-electronic computer mill.

Like the paralleled epidemiologic researches in other areas in this co-ordinated program, it is hoped that this cross-sectional survey in Serbia can be extended into a follow-up study for at least five years. Incidence is more important than prevalence, and the follow-up will show what characteristics of men in health are significant for future disease development. All of this should contribute to the long-range goal of prevention of heart disease. So this present work should be only the beginning.

Accordingly, we are most interested in the reaction of the men from Belgrade who visited the field operation yesterday. The delegation was headed by the Yugoslav Minister of Health, Noma Markovic, and included the former minister, currently Director of the National Health Institute, Dr. Herbert Kraus, and Dr. Radivoje Berovic, Dean of the Medical Faculty. Their good will is essential for long-term support. Also, in the future I hope help will come from the U.S. Public Health Service.

Tonight there will be a dinner, with speeches no doubt, in a small hotel at Topola where Kara George ("Black George"), the founder of the dynasty that preceded Tito, and his descendants are buried in a mosaic-encrusted Byzantine-style church (built 1930). And tomorrow I leave for home via Vienna. A couple of days ago I 'phoned Margaret from Belgrade and she said rain and cold weather continue in the Twin Cities. I hope it brightens by the 30th when we are to receive 20 of my cardiologic colleagues from Finland, Holland, Belgium, Israel, Italy, Japan, Egypt, and Russia who will stay three days before we all go on to the World Congress on Cardiology in Mexico. In the meantime, I'd like to clean off the desk and get some rest, but that is a forlorn hope.

All best wishes,

As ever,

Ancel Keys

Ancel Keys

Ernest M. Hammes, M.D.

W. H. HENGSTLER, M.D.

St. Paul

We who have practiced medicine in this area during the past fifty years have learned to associate certain representative physicians with the specialty in which they are engaged. When neuropsychiatry is mentioned, we think immediately of Dr. Ernest M. Hammes of St. Paul.

Dr. Hammes was born February 26, 1884, at New Trier, Minnesota. His father, Dr. E. W. Hammes, had practiced medicine for forty-one years at New Trier and Hampton. Ernest's early education was received in the public schools at New Trier, and his high school education in Hastings.

After graduation from University of Minnesota medical school in 1906, he served his internship at the City and County Hospital in St. Paul during 1906 and 1907. He became interested in neurology and psychiatry, and, after finishing his internship in 1907, he became associated with Dr. C. Eugene Riggs of St. Paul, who was a pioneer in neuropsychiatry in the Northwest. In order to equip himself more fully in his chosen specialty, Dr. Hammes did postgraduate work in neuropsychiatry during 1909 and 1910 in Frankfurt, Germany, and in Vienna.

During the first year of his association with Dr. Riggs, Dr. Hammes met Miss Hester Douglas Wilson, a nursing supervisor in Mounds Park Hospital in St. Paul. They were married on October 11, 1910. They have 3 children—2 daughters and a son.

In 1913, Dr. Hammes was appointed to the teaching staff in the neuropsychiatric department of the medical school at the University of Minnesota. In 1933, he became professor of neurology and psychiatry. In 1953, he was elevated to emeritus professor in the same department. Dr. Hammes was an excellent teacher and was very popular with the medical students, who enjoyed his lectures and were intrigued with his habit of beginning each lecture with a story.

When the United States went to war with Germany in early 1917, Dr. Hammes offered his services to his government and was commissioned captain in the Medical Corps. He served in France with Base Hospital 99 and was in charge of the neuropsychiatric service of that hospital. Upon his discharge from the service after the war he returned to private practice in St. Paul.

Dr. Hammes was always very active in the Ramsey County Medical Society, serving as secretary for many years and becoming president in 1925. He was also active in promoting the first St. Paul "Clinic Week" early in the 1920s which was a highly successful medical gathering.

He has presented many scientific papers to state and county medical societies throughout the northwestern states and has published many scientific articles in his chosen field of neurology and psychiatry. In the practice of his profession, he has been widely known, and he has had a large consultation practice. In recognition of his professional attainment, he was appointed psychiatric consultant at the Stillwater Prison in 1927, a position which he held until 1932. He was chief of the Neuropsychiatric Service at Ancker Hospital in 1950, for many years consultant neuropsychiatrist at the Gillette State Hospital for Crippled Children, and neuropsychiatric consultant for the United States Veterans Bureau from 1919 to 1929.

Dr. Hammes was president of the Minnesota State Medical Association in 1949 and served on the council of this association for eight years. In 1957, he

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W. H. HENGSTLER *is a specialist in neurology and psychiatry in St. Paul and is on the staff of several St. Paul hospitals.*

became a member of the 50-Year Club of the association and, in 1958, was given the Distinguished Service Award in recognition of many years of service to the association and to the practice of medicine in Minnesota. He was chairman of the editing and publishing committee of *Minnesota Medicine* for many years, and, since 1940, has served as chairman of the medical testimony committee of the association. In this connection, he was invited to discuss the activities of the committee before the medical and bar associations in Iowa, Omaha, Chicago, St. Louis, Baltimore, and Atlantic City. In 1946, the federal judges of the Sixth District, including Ohio, Michigan, Kentucky, Tennessee, and West Virginia, placed this "Minnesota Plan" on their annual program for discussion.

Dr. Hammes is still at his office daily for consultations and examinations. His son, Dr. Ernest Hammes, Jr., has been associated with him for several years in the practice of neuropsychiatry. Dr. Hammes has continued his keen interest in organized medicine and has always been ready to do all he could to promote the welfare of the practice of medicine. He is a senior member of the Minnesota Academy of Medicine, of which he was president in 1947. He is a member of the Central Neuropsychiatric Association, of which he was president in 1942, 1943, and 1944. He is a member of the Minnesota Society of Neurology and Psychiatry, of which he was president in 1927, and he is a Life Fellow of the American Psychiatric Association and a member of the American Neurological Association. He is a member of the American Medical Association, which he served as alternate delegate for many years; the American Academy of Neurology; the Association for Research in Nervous and Mental Diseases; and the International League for Epilepsy.

Dr. Hammes was active in the organization of the Blue Shield in Minnesota, has been on its board of directors since 1947, and was elected its president in 1960. He was collaborator in "Legal Medicine" compiled by Dr. R. B. H. Gradwohl of St. Louis, and published by C. V. Mosby Company in 1954. He was also on the Governor's Mental Health Committee from 1949 until May 1953 and was a member of the committee for the revision of laws for the commitment of mental patients in Minnesota.

He is a member of the staff of Ancker, St. Luke's, Children's, St. Joseph's, Charles T. Miller, Mounds Park, Midway, and St. Johns hospitals, all in St. Paul. He served for many years on the Board of Directors of Family Service in St. Paul. He is a member of the St. Paul Rotary Club, the Minnesota Club, and the Knights of Columbus.

Dr. Hammes is a man of winning personality and possesses a great capacity for making friends. While he was in school, he was an active member of the Phi Beta Pi fraternity, where his popularity is well remembered. He has always been in great demand as a toastmaster, and many a dinner and banquet has been graced by his ability in that capacity. His great interest and his dynamic activities in the field of medicine have given him a wide acquaintanceship and a host of friends. His genial personality and sense of humor have gained for him the respect and affection of those who know him.

NEARLY HALF of patients with early Hodgkin's disease are anergic, and ability to manifest a delayed hypersensitivity reaction diminishes as the disease progresses. Suppression of delayed allergy may be associated with the genesis of Hodgkin's disease, or the causative agent of the disease may interfere with immune response. Anergy to common antigens may be a valuable sign in diagnosis of Hodgkin's disease. Anergy is rare early in the course of carcinoma, leukemia, or non-Hodgkin's lymphoma. Six microbial antigens were used to test development of delayed hypersensitivity in 57 patients with Hodgkin's disease, 41 with other lymphomas, 59 with carcinoma, 35 with leukemia, and 208 without malignant disease.

D. LAMB, F. PILNEY, W. D. KELLY, and R. A. GOOD: A comparative study of the incidence of anergy in patients with carcinoma, leukemia, Hodgkin's disease and other lymphomas. J. Immunol. 89: 555-558, 1962.

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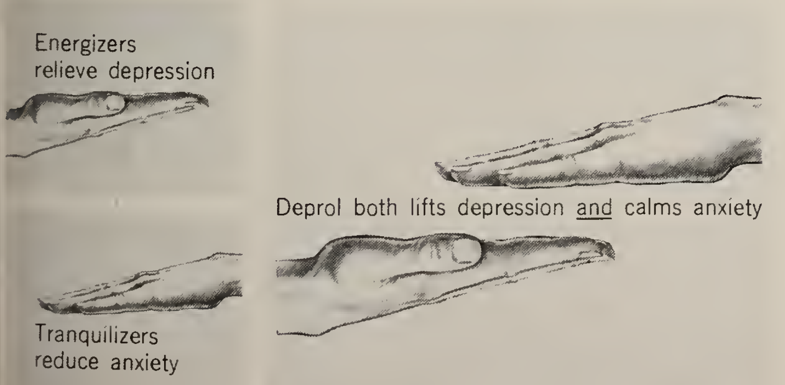
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Book Reviews . . .

Underwater Medicine

STANLEY MILES, M.D., *1962. Philadelphia: J. B. Lippincott Co. 328 pages. Illustrated. $10.00.*

Dr. Stanley Miles states in the preface that: "This book is an attempt to review and bring together current work and knowledge of the medical problems of the underwater environment, to consider the dangers and their avoidance and to look at the potential man has before him." Although primarily technical, his book still contains enough historical references and bits of philosophy to make it entertaining.

The first sentence in the book is particularly significant to physicians interested in the field or those who may be called upon to give advice to individuals who want to become a member of the increasingly popular group of SCUBA divers: "It is most important, right at the outset, to realize that the problems of man's adaptation to a watery environment are primarily those of temperament. (His analysis of the reason for temperament being such an important factor is somewhat in conflict with that of the reviewer, although it does provide interesting reading.)

The book is divided into 3 parts: the environment, the hazards of the environment, and coming to terms with the environment. Of most interest to practicing physicians is the section on selection and training of divers and underwater swimmers. The reviewer certainly agrees with his statement that one does not have to be a superman to be a good underwater swimmer or diver, as well as his statement that the majority of people who have failed to make the grade as divers have done so because of inadequate temperamental adaptation. He observes that there seems to be no alternative to trial and error as a means of selection and that until more is known about the field, anyone who strongly desires to go under water should be given a trial with the proviso that he meet certain basic medical standards.

The author lists the medical qualifications in 7 categories: (1) Age; it is not really of much importance provided there is a reasonable degree of physical fitness. (2) Standards of fitness; under this category he mentions emotional stability and sober habit, as well as physical capacity to face the hazards of everyday life. (3) The respiratory system; he mentions such items as chronic respiratory disease, including tuberculosis, emphysema, sinusitis, and asthma. (4) The ears; one of the essentials is that a diver must be able to get air through the eustachian tubes in order to equalize the pressure in the middle ear. He makes the statement that a perforated eardrum need not be disqualifying, as such, but that each case should be taken on its merits. (That statement is in some contradiction to the physical standards listed in the U. S. Navy publication "NAVMED-P 5054," where the statement is made: "Perforation or marked scarring and/or thickening of the drum shall be disqualifying.") (5) Cardiovascular system; there must be no gross impairment of exercise tolerance or evidence of cardiovascular disease. This is probably an excellent general statement. (6) Central nervous system; any history or evidence of repeated fits or attacks of unconsciousness must disqualify. (7) Teeth; his general statement under that classification, "Bad teeth are usually associated with bad health," appears somewhat questionable in this country. He does not mention that occasionally a small bit of air trapped in the pulp of a tooth or in a part of the tooth, where the soft tissue can be directly affected by the increased pressure, may produce pain.

He states that the list cannot be taken as more than a guide because there are many temporary or permanent medical conditions which may be disqualifying. He does point out that persons with acute respiratory and ear conditions should be restricted from diving.

For the physician who is interested in the specific technical features of underwater activities, the reviewer would recommend "Submarine Medical Practice, NAVMED-P 5054," and the "U. S. Navy Diving Manual, NAVSHIPS 250-538," both of which are available from the United States Government Printing Office. They are rather large, detailed treatises. For the physician who wishes a quicker review of the subject, a booklet of about 75 pages, "Diving with Safety," written by Bev Morgan and published by the U. S. Divers Company, is recommended. For physicians upon whom a call is made to give instructions or a talk to a group of divers, there is available through the AMA Library an excellent color film, "Man Returns To The Sea," prepared by Dr. G. D. Taylor. Doctor Taylor has also written an excellent comprehensive article, "The Otolaryngologic Aspects of Skin and SCUBA Diving" (Laryngoscope 69:809-858, 1959).

Doctor Miles is to be complimented for assembling in such a readable style the information which he has put into his book. For those unfamiliar with the field, it provides an interesting, easily read introduction. The format of the book is excellent, no typographical errors are noted, and the type is clear and readable. Examples and historical accounts of diving contribute greatly. But for the average physician confronted with problems which are being produced in increasing numbers throughout the United States by the rapidly growing sport of SCUBA diving, it does not contain sufficient detail for use as a reference when he encounters not only questions from potential divers but also medical problems produced by diving. For the latter, the Navy medical publications have, in the reviewer's experience, proved much more precise and helpful.

JOHN SMILEY, M.D.
Minneapolis

Manual of Anesthesiology for Residents and Medical Students

HERMAN SCHWARTZ, M.D., S. H. NGAI, M.D., *and* E. M. PAPPER, M.D., *second edition, 1962. Springfield, Illinois: Charles C Thomas. 189 pages. Illustrated. $6.*

Dr. Schwartz and his co-authors have elaborated on the manual which they have used as an outline for introducing new persons to the specialty of anesthesiology. It touches on technical dexterity and didactic teaching.

The book covers most of the subjects that need to be studied from the point of view of anesthesiology today. The use of abbreviations may be unavoidable. However, if many of the words were defined and elaborated on so that the author's meaning was clear, even to a newcomer, it would be an improvement over earlier teaching

(Continued on page 18A)

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(Continued from page 16A)

methods which left a person with an inexact idea of the author's thoughts and intentions. This is as true now as in the past when Latin words were used and few took the trouble to find out what they meant.

Nevertheless, there are a number of features of the book that make it desirable and, one might almost say, required.

It is printed on good paper, indexed, and has a sufficient number of illustrations and references included in each chapter. The tables of the normal values in this book are an important phase of it and should be included in any such publication.

Each subject is briefly dealt with and some chapters have a good number of references included. This is necessary in any event for brevity.

The authors have accomplished what they intended to do: to make their teaching method available to those outside of their own classroom.

JOHN S. LUNDY, M.D.
Chicago

Internal Medicine in World War II: Activities of Medical Consultants

Prepared and published under the direction of LT. GEN. LEONARD D. HEATON, *Surgeon General, U. S. Army;* COL. JOHN BOYD COATES, JR., M.C., *editor-in-chief; and* W. PAUL HAVENS, JR., M.D., *editor for internal medicine, Volume 1, 1961. Washington, D. C.: Government Printing Office. 880 pages. Illustrated. Cloth. $7.50.*

This volume presents the history of the medical consultants during World War II. Before February 1942, the Armed Forces had not provided for a medical consultant, and the introduction of this new program required a great deal of adaptation. The book presents, in a realistic, critical, and interesting fashion, the experiences of the consultants in the various theaters in the field of internal medicine. The story of each theater is well presented, and the problems in disease, administration, and personnel are realistically described. The book is amply illustrated with photos which, to one who has served in the various theaters, recall familiar pictures.

In addition to the reminiscent value of this volume, it has a definite reference function for anyone interested in the operation of the medical corps. Surgeon General Leonard D. Heaton described this function in the Foreword: "This book is a record of past wartime experiences but it has in it the plans and policies . . . which must guide us in our preparations for a possible future war. It should be read with calm reflection in peactime to determine the measures which must usefully be employed in wartime. It contains a frank and realistic account of errors which must not be made again."

DAVID M. CRAIG, M.D.
St. Paul

Psychotherapeutic Techniques in Medicine

MICHAEL BALINT, M.D., *and* ENID BALINT, M.D., *1962. Springfield, Illinois: Charles C Thomas. 236 pages. $4.50.*

When psychiatrists attempt to reveal the secrets of the psychiatric interview to general physicians, the result is too often a collection of case illustrations which provide a meager account of what actually occurs in psychotherapy or a partial revelation of interviewing technics which, in the opinion of the psychiatrist, should be used by all physicians. Therefore, it is not surprising that the physician is often disappointed when he turns to this literature for help in dealing with the emotional ills of his patients. In refreshing contrast, *Psychotherapeutic Techniques in Medicine* draws its material from the experience of general physicians who have met regularly with the authors for a number of years in a therapy discussion group. The cases cited, the therapeutic results obtained, and the questions raised are consequently peculiar to family practice, resulting in an interesting 228-page volume characterized by the complete integrity with which the problems of general practice treatment of the emotionally ill patient are approached.

The general physician, who characteristically sees a patient over a period of years, has a unique opportunity to carry out psychotherapy. The setting existing in general practice differs markedly from that in which the psychiatrist usually works, and the relationship the family physician has with his patients is constantly changing in intensity and character, depending on the emotional needs of the patient at a given time. In organic medicine, the doctor examines his patient and does something to him; when psychotherapy is undertaken, the patient, with emotional support from the doctor, examines his own emotions. These fundamental differences make it necessary for the physician to alter his own philosophy of medical practice in order to understand the emotional life of the patient and, in turn, to help the patient understand himself. Only when this occurs can the therapy make sense to both the patient and the doctor.

The frank reports by these physicians of their changes in feeling about their patients and themselves provide fascinating reading material for the psychiatrist interested in assisting medical students and nonpsychiatric physicians with psychotherapy. They should prove equally rewarding for any practitioner desiring to learn more about work in this field. This is the first volume in the "Mind and Medicine Monograph Series;" the prospective reader should be warned that he may be moved by the excellence of this book to purchase one or more of the succeeding 5 volumes.

RICHARD W. ANDERSON, M.D.
Minneapolis

Research Approaches to Psychiatric Problems: A Symposium

THOMAS T. TOURLENTS, M.D., SEYMOUR L. POLLACK, M.D., *and* HAROLD E. HIMWICH, M.D., *editors, 1962. New York: Grune & Stratton. 238 pages. Illustrated. $5.50.*

Research in psychiatry has been notoriously difficult and inconclusive in the past. Recently, improved technics and an increasing knowledge of the basic sciences have stimulated a variety of approaches, some new and some old, to psychiatric research.

This book is a collection of papers given at the Tenth Anniversary Symposium of the Galesburg State Research Hospital held in October 1960 at Galesburg, Illinois. The authors are respected investigators and authorities in their areas. They covered problems in neuroanatomy and physiology, psychopharmacology, genetics, epidemiology, biochemistry, "sensory deprivation," psychosomatics, and developmental psychology. The technics used are well discussed by the authors and other participants in the symposium. Their conclusions are tempered by recog-

(Continued on page 20A)

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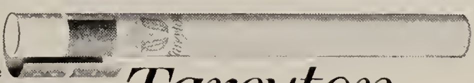

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(Continued from page 18A)

nized limitations of their technics and general approaches, and, for the most part, their perspective is good. Although none of the studies offers immediately useful information for the treatment or prevention of psychiatric illnesses, the work is exciting and promising and eventually may accomplish these ends.

Since the book is essentially comprised of reports and discussion on research, the busy practicing physician may not justify the time spent in reading it if he has to sacrifice his clinical literature. However, if he can occasionally set aside time for delving into research papers, with the motive of discovering what is currently happening behind the scenes in psychiatry, this book may interest him. Some of the papers, especially those on genetics and biochemistry, involve a considerable amount of study, but with the aid of good illustrations and tables these are understandable to the average physician. Certainly, most students interested in research or psychiatry would find this book worthwhile and stimulating.

THEODORE G. LARSON, M.D.
Minneapolis

Synopsis of Genitourinary Disease

AUSTIN I. DODSON, JR., M.D., *and* J. EDWARD HILL, M.D., *second edition, 1962. St. Louis: The C. V. Mosby Co. 384 pages. Illustrated. $7.75.*

A summarization of the field of urology, including anatomy, diagnostic methods, diseases, and treatment, is presented in this small book.

There are many pen and ink drawings and pyelograms to illustrate anatomy and disease conditions. Several excellent composite drawings present an easy and unique method of differential diagnosis. All of the material is well organized in an outline form.

The first chapter discusses the important signs and symptoms of urinary tract diseases and the technic of physical examination. Another chapter is devoted to minor urologic surgery, instrumentation, and office procedures which the authors feel could be done by the general practitioner. There are pictures of the various types of urethral instruments and catheters. Urologic anomalies and diseases are discussed in more detail in subsequent chapters, and considerable time is devoted to the important subject of infections.

The book is recommended for the medical student or junior house officer who wants the essential facts in a condensed form and is not interested in the details of surgical technic or complete management. It should be a handy reference for the busy practicing physician.

BRUCE E. LINDERHOLM, M.D.
Minneapolis

Diseases of Porphyrin Metabolism

A. GOLDBERG, M.D., *and* C. RIMINGTON, M.A., PH.D., *1962. Springfield, Illinois: Charles C Thomas. 331 pages. Illustrated. $9.75.*

A short but comprehensive survey of present knowledge on the chemistry and clinical manifestations of disordered porphyrin metabolism is presented in this monograph. The book has been written primarily for the clinician but will also serve as an excellent reference source for investigators.

The text is divided into 8 chapters, followed by a complete list of literature references. In the first 2 chapters the history, classification, and chemistry of porphyrin metabolism is covered. Chapters 3 through 5 present, in considerable detail, the clinical aspects of the porphyrias, and in chapter 6 alterations in porphyrin metabolism related to diseases of the liver, blood, metal poisoning, cancer, and other disorders are discussed. In these sections, clinical manifestations, pathology, diagnosis, and therapy are described in brief but concise and practical terms. Many excellent photographs, illustrating clinical and laboratory features of the porphyrias, are included.

Porphyria in animals and experimental porphyria are discussed in chapters 7 and 8. The implications in regard to human porphyrin disorders make these chapters interesting reading.

Throughout the text the authors have succeeded in presenting briefly, yet in detail, all aspects of a difficult field; the material is understandable to the clinician who may not have an extensive biochemical background. This book is highly recommended for medical students, investigators, and particularly clinicians in the field of general medicine to read for a better understanding of an interesting and difficult subject.

ALVIN L. SCHULTZ, M.D.
Minneapolis

Sports Injuries and Their Treatment

JOHN H. C. COLSON *and* WILLIAM J. ARMOUR, *1962. Philadelphia: Lea & Febiger. 224 pages. Illustrated. $5.00.*

The physician, trainer, or any individual interested in athletic injuries would find this volume a useful guide. It is well-written, clear, and concise; its illustrations are in sequence so one is able to see how tape should be applied, how knees should be tested for injuries, and when a fracture has occurred. The volume enables the individual without medical training to differentiate between the patient who needs additional care and one with minor injuries.

The nerves are important to any athlete, and trauma usually results in a rather painful injury of long standing. The authors have described the treatment, such as application of heat, cold, or counter-irritants. Additional care, such as massage, electrotherapy, and exercise are suggested to facilitate recovery.

Another division of sports injuries is the testing of an athlete's fitness to participate after an injury. Many sports injuries result in torn ligaments—especially of the knee, ankle, and shoulder. The trainer or the doctor present for the athletic event must check these vulnerable areas to prevent further injury and advise when the athlete is able to continue. Common football injuries, such as fractures of toes, knees, or ankles, are well described. Injuries of the upper limbs, especially those occurring in golf or tennis, also are covered. The last portion of the book discusses, in detail, first aid on the field and prevention of injuries.

EDWARD N. NELSON, M.D.
Minneapolis

Curvatures of the Spine

EMIL D. W. HAUSER, M.D., *1962. Springfield, Illinois: Charles C Thomas. 190 pages. Illustrated. $9.75.*

This treatise is an excellent presentation of the vertebral column and its associated structures, in both normal and abnormal states. The author's basic understanding of his topic enables him to present a difficult subject clearly and concisely. Several appropriate illustrations are also included.

(Continued on page 23A)

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(Continued from page 21A)

The back is presented as a dynamic rather than a static structure, and, as a result, an entirely new meaning is given to the subject.

Dr. Hauser's approach is logical and conservative, reflecting extensive experience with his material. He begins with a basic description of terms, discusses briefly the pathology involved, and then branches to the symptoms and classifications, outlining the latter in the subsequent chapters.

The section on mechanics is worthy of special consideration and requires but a few minutes to read.

The portion on treatment of the prescoliotic stage would be of considerable interest to the pediatrician and general practitioner, who are truly in a position to recognize such problems.

The sections on treatment of established scoliosis are vital to the armamentarium of any orthopedist.

The final chapter deals with exercises, which are applicable not only to scoliosis but also to other facets of back disease.

Considering the meager amount of time required to digest the book and the wealth of knowledge contained therein, this text should be read by any physician who diagnoses or treats diseases of the back.

DAVID W. FLORENCE, M.D.
Minneapolis

A Primer of Water Electrolyte and Acid-Base Syndromes

EMANUEL GOLDBERGER, M.D., F.A.C.P., *second edition, 1962. Philadelphia: Lea & Febiger. 374 pages. Illustrated. $6.00.*

This book is the second edition of a work first published in 1959. The author approaches the physiology of acid-base and water and electrolyte regulation from the standpoint of the practicing physician. He describes the problems of acid-base regulation as they present themselves to the clinician. Several chapters are devoted to a general review of the physiology of body water and electrolytes, while other chapters deal with certain clinical syndromes, such as dehydration, overhydration, uremia, and so forth. The text is concise and contains a minimum of mathematical calculations. In each chapter the author describes the clinical picture in terms of symptoms, bedside findings, laboratory findings, and, then, treatment. A short bibliography follows each chapter and 3 appendices at the end of the book illustrate calculations of shifts of water and sodium chloride in different osmotic compartments, in hyponatremia, and in hyperglycemia.

This book is well written and concise. It deals with a large field of clinical medicine and, in order to organize the subject matter, the author writes in a straightforward, direct, and, sometimes, a slightly dogmatic fashion. Some authorities might disagree with certain statements in the book (for example, that the total insensible body loss in an average afebrile individual is 600 cc. from the skin and 400 cc. from the lungs and that the average afebrile adult at rest burns 2,000 calories. Both of these estimates are probably 25 per cent too high.). However, this book is a primer and is not intended to be an exhaustive survey of this subject. There are many clinical "pearls" scattered through the text, and it can be recommended to all physicians who will someday be called upon to deal with water and electrolyte problems.

DAVID GOLD, M.D.
Minneapolis

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News Briefs . . .

General

THE MID-CENTRAL STATES ORTHOPAEDIC SOCIETY, INC., will hold its tenth annual meeting at the South Holiday Inn, Des Moines, Iowa, May 2 to 4. President of the society is D. C. Wirtz of Des Moines.

* * * *

THE STAFF OF THE MAYO CLINIC and Faculty of the Mayo Foundation for Medical Education and Research will present Clinical Reviews in March. The program will be similar to those held in Rochester for many years. It will consist of lectures and discussions on problems of current interest in general medicine and surgery. Those attending will be eligible for twenty-five hours of Category I credit from the American Academy of General Practice and the College of General Practice of Canada. Identical sessions will be offered March 11 through 13 and March 18 through 20. Doctors may indicate which session they prefer by writing to M. G. Brataas, Mayo Clinic, Rochester.

North Dakota

DR. FRANK A. HILL has been elected chief of the medical staff and president of the executive board of St. Michael's Hospital, Grand Forks. He succeeds Dr. Ralph E. Leigh. Dr. Hill is a Fellow of the American College of Obstetrics and Gynecology, Diplomat of the Board of Obstetrics and Gynecology, and Fellow of the American College of Surgeons. The other members of St. Michael's executive board are Dr. Walter C. Dailey, vice-president; Dr. John J. McLeod, Jr., secretary; Dr. Kenneth S. Helenbolt; Dr. William P. Keig; and Dr. Leonard J. Prochaska, Jr.

* * * *

DR. H. C. WALKER, JR., of Williston has been promoted to the grade of surgeon in the inactive reserve of the United States Public Health Service. Dr. Walker, who is associated with Craven-Hagen Clinic in Williston, has been in the reserve since 1944.

* * * *

DR. F. D. MCDADE of Regina, Saskatchewan, has become associated in general practice with Dr. Haralds Kuplis at Turtle Lake. Dr. McDade is a graduate of Queen's University, Kingston, Ontario, and was licensed by the North Dakota Board of Medical Examiners in 1950.

* * * *

DR. W. R. JENSEN has been elected president of the staff of Mercy Hospital in Valley City. He succeeds Dr. Gunder Christianson. Dr. C. E. Jensen was elected vice-president and Dr. C. J. Klein was reelected secretary-treasurer. The medical committee includes Dr. C. E. Jensen, medical; Dr. Christianson, surgical; and Dr. J. W. Goven, pediatrics and obstetrics. Members of the tissue and infection committees are Dr. N. A. Macdonald, Dr. Christianson, and Dr. Klein. Dr. C. E. Jensen and Dr. Macdonald are on the hospitalization committee.

* * * *

DR. C. K. FERCHO has been elected president of the medical staff of St. John's Hospital in Fargo, succeeding Dr. J. F. Houghton. Dr. James Murray was elected vice-president and Dr. Robert Geston, secretary-treasurer. Elected to the medical advisory board for three-year terms are Dr. R. J. Zauner and Dr. Geston. Other board members are Drs. M. B. Gustafson and J. J. Spier. Department chiefs elected are Dr. E. P. Wenz, surgery; Dr. Gordon Magill, medicine; and Dr. J. R. Dillard, obstetrics-gynecology.

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DR. M. A. K. LOMMEN of Bismarck has been elected president of the Sixth District Medical Society for 1963. He succeeds Dr. Paul Johnson. Other officers elected are Dr. O. V. Lindelow, vice-president, and Dr. R. Warren Pierson, secretary-treasurer. Dr. R. W. Henderson was elected to the board of censors; Dr. Milton E. Nugent, Dr. Robert B. Tudor, and Dr. Lommen, House of Delegates; and Dr. Edmund Vinje of Hazen, board of directors for Blue Shield.

* * * *

DR. M. A. K. LOMMEN has been elected president of the medical staff of St. Alexius Hospital, Bismarck, succeeding Dr. P. L. Owens. Other officers are Dr. J. J. Moses, president-elect; Dr. J. W. Cleary, secretary; and T. L. Stangebye, member-at-large.

Minnesota

DRS. H. A. KNOCHE and A. F. DYSTERHEFT have formed the Gaylord Clinic in the offices formerly occupied by the Knoche Clinic.

* * * *

THE CENTER FOR CONTINUATION STUDY, University of Minnesota, Minneapolis, will present the following medical continuation courses in March, April, May, and June: Neurosurgery, March 1 and 2; Trauma, March 15 and 16; Otolaryngology, April 15 to 17; Obstetrics, April 25 to 27; Ophthalmology, April 29 to May 1; Surgery, May 16 to 18; Psychiatry, May 27 to 29; and Anesthesiology, June 3 to 5. Further information may be obtained from the Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.

* * * *

DR. ROBERT GORLIN and the University of Minnesota have received a grant of $115,000 from the United States Public Health Service to study the possible link between external body conditions such as cysts, cleft lips and palates, and abnormalities inside the body. The research may provide information for predicting early cancer conditions, aneurysms, and other organic defects. Findings may also be useful in genetics. The grant, largest ever given in oral pathology, will allow expansion of the School of Dentistry staff and improve record keeping. Dr. Gorlin is a professor of dentistry at the University of Minnesota School of Dentistry and a pathologist.

* * * *

DR. REMI L. PIZARRO has joined Dr. W. R. Smith and Dr. Roger MacDonald in practice at Grand Marais. Dr. Pizarro, a native of the Philippines, attended Far Eastern University and Institute of Medicine in Manila; he interned at St. Barnabas Hospital in Minneapolis.

* * * *

DR. THEODORE P. MOLLERS of Soudan has turned over his practice to Dr. H. W. Bartholdt, a former New Jersey physician.

* * * *

DR. JOHN HOLTEN of Moorhead is the new president of the Clay-Becker Medical society. He succeeds Dr. John Rutledge of Detroit Lakes. Dr. Robert N. Watson of

(Continued on page 26A)

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NEWS BRIEFS

(Continued from page 25A)

Detroit Lakes has been named president-elect for 1964. Other officers include Dr. Olga H. Johnson of Moorhead, vice-president; Dr. Lee Bjerke of Hawley, director; and Dr. Mark Odland of Detroit Lakes, secretary-treasurer. Named to the board of censors were Drs. H. G. Rice of Moorhead and W. C. Dodds and C. W. Moberg, both of Detroit Lakes. Delegates to the state association will be Drs. Ivan Bigler of Perham and Erick Reber of Frazee.

* * * *

DR. NORVIN R. SMITH has been appointed acting medical director of the Hastings State Hospital. Dr. Smith was on the hospital staff from 1951 to 1953 and returned last summer. He fills the vacancy created by the resignation of Dr. Ivan W. Sletten.

* * * *

DRS. PAUL A. STAHLER and **ELIZABETH RIESCHL** have discontinued their practice in Jordan. Dr. Stahler plans to remain in Jordan and continue in some phase of medical work.

* * * *

DR. CHARLES N. BEAN has joined Dr. John W. Clarke at the Lakeview Clinic in Waconia. Dr. Bean received his medical degree from the State University of Iowa College of Medicine.

* * * *

MAYO ASSOCIATION, Rochester, has received a grant of $333,072 from the National Institute of Arthritis and Metabolic Diseases of the Department of Health, Education, and Welfare for research in gastroenterology. Dr. W. H. J. Summerskill of the Mayo Clinic will head the research.

* * * *

DR. W. HENRY HOLLINSHEAD, head of the Section of Anatomy of the Mayo Clinic in Rochester, is visiting professor of anatomy at the University of Washington School of Medicine in Seattle during winter quarter, January through March. Dr. Hollinshead was one of the original members of the staff at Duke University School of Medicine, Durham, North Carolinia, in 1930 and went to the Mayo Clinic in 1947 to organize the Section of Anatomy.

Deaths . . .

DR. CHARLES R. DRAKE, 81, Minneapolis and St. Paul physician for more than fifty years, died January 10 in Minneapolis. Dr. Drake was a graduate of the University of Minnesota Medical School, Minneapolis, and helped to establish the first laboratory at University of Minnesota Hospitals.

* * * *

DR. ROBERT WILLIAMS, 89, Minneapolis physician for nearly forty years, died December 26. Dr. Williams was graduated from Rush Medical College, Chicago, in 1900 and was chief of staff at St. Barnabas Hospital in Minneapolis in 1926 and 1927. He was a former vice-president of the Hennepin County Medical Society and after retirement in 1946 was a Selective Service medical examiner.

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Articles and features to be found in the next issue of THE JOURNAL-LANCET

The editors of THE JOURNAL-LANCET are extremely proud to announce a special issue on surgery which will appear in the May issue. Owen H. Wangensteen, M.D., chief of surgery, University of Minnesota Medical School, as guest editor, has assembled a group of papers, especially written, which touch on phases of surgery and its specialties, the relation of surgery to the broad phases of medicine, research, and training of surgeons; the role of community and specialized hospitals; and a special history of the university's Department of Surgery.

The editors sincerely feel that this presentation will take its place among the outstanding special issues which have been presented over the years and that the articles will make a real contribution to the understanding of the role of the Department of Surgery in the entire medical community.

Articles written for this special issue of THE JOURNAL-LANCET are:

- **Role of the Municipal Hospital in the Training of Surgeons,** by Claude R. Hitchcock, Minneapolis.
- **A Concept of the Role of Neurosurgery,** by Lyle A. French, Minneapolis.
- **The Role of Veterans Hospitals in Postgraduate Surgical Training,** by Edward W. Humphrey, Minneapolis.
- **The Roles of Research and Basic Science in the Training of Surgeons,** by William D. Kelly, Minneapolis.
- **The Role of Plastic Surgery in the Medical School Curriculum,** by N. Logan Leven, St. Paul.
- **Building an Effective Training and Teaching Program in a Voluntary Hospital,** by Fletcher A. Miller, Minneapolis.
- **The Relationship of Orthopedic Surgery to Greater Medicine Today,** by John H. Moe, Minneapolis.
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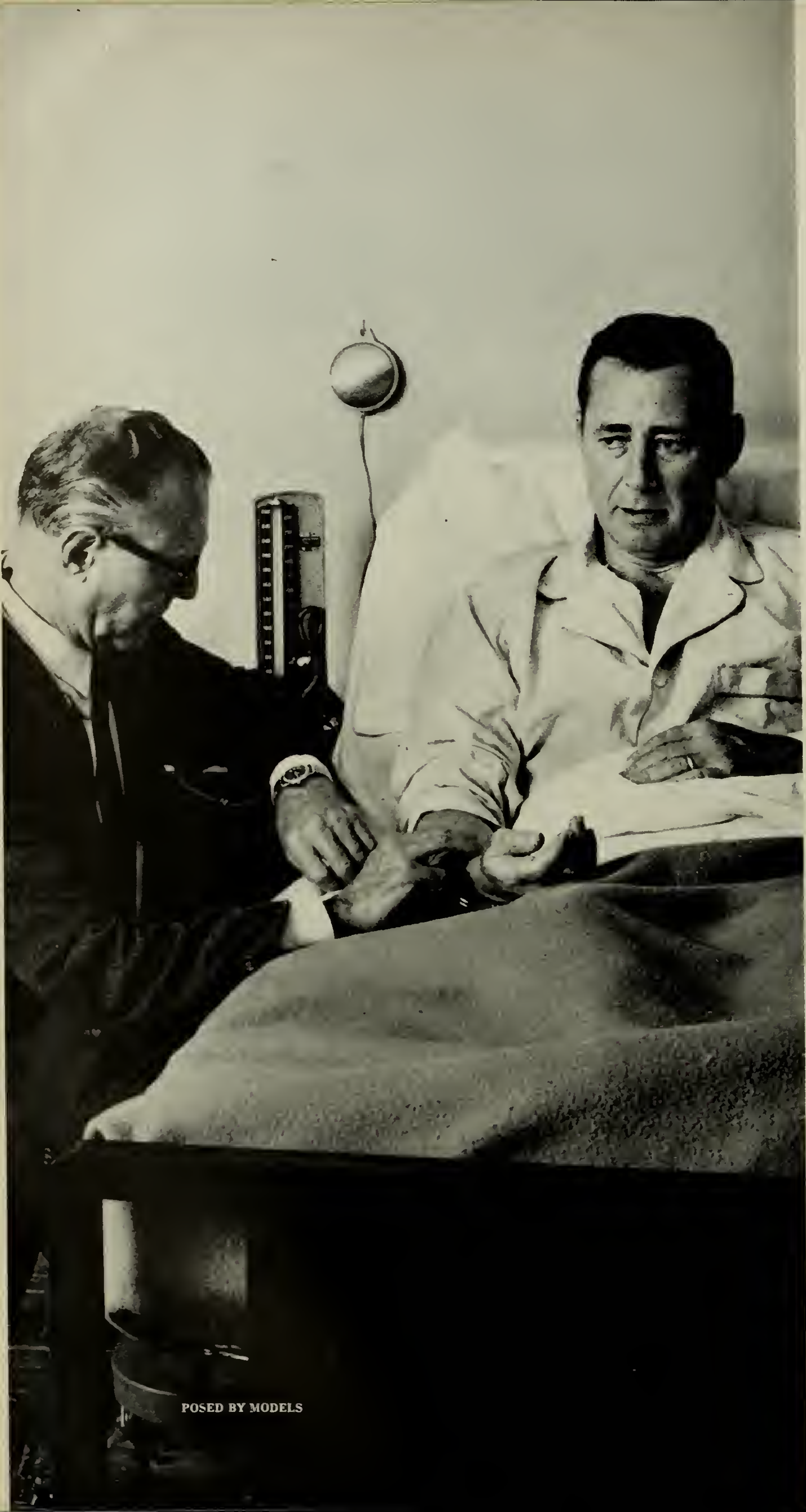

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The Journal-Lancet

SERVING THE MEDICAL PROFESSION OF MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA, AND MONTANA

Section on PAIN and DISTRESS

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Introduction

In this Section on Pain and Distress, we hope to include articles which will call attention to some of the problems encountered in the practice of medicine. Treatment of these problems will probably be strongly flavored with hospital practice but will be amenable, I am sure, to adaptation in the home, if that should be necessary. Consideration of problems will be given not only from the point of view of the physician but from that of the dentist, the nurse, and, in some instances, the technician, who is indispensable in the care of patients today. As an example, the newly organized inhalation therapists are making a real effort to improve their service to the physician and his patient. Recently I met with the Illinois Chapter of the Inhalation Therapists, and I am including in this issue my remarks during their meeting at Oak Park Hospital, Illinois, on January 31, 1963. There can be little doubt that the dyspneic patient is in distress and, although in the last issue I mentioned the use of levallorphan tartrate (Lorfan Tartrate) by mouth for the symptomatic relief of dyspnea, there is no substitute for the actual treatment of the cause of the dyspnea, such as the administration of oxygen. The physician should interest himself in any effort made by any group, whether professional or lay, that is aimed at improving his patient's opportunity to obtain relief.

JOHN S. LUNDY, M.D.

History of Inhalation Therapy

JOHN S. LUNDY, M.D.

Chicago, Illinois

TODAY INHALATION THERAPY is concerned largely with the administration of oxygen alone or supplemented by the use of medication. This fact automatically limits the period with which we are concerned to one of less than two hundred years—since Joseph Priestley discovered oxygen in England in 1774. Karl Wilhelm Scheele discovered oxygen in Sweden between 1771 and 1773 but did not report his discovery at the time. Joseph Priestley also discovered nitrous oxide. Today the intensively trained newcomer to this modern field might have devoted so much attention to the practical aspects of the well-organized department of inhalation therapy that much of its long background and gradual evolution might not be obvious to him.

Actually, inhalation therapy is closely associated with anesthesia and the development of general anesthesia, in particular. As long ago as 450 B.C., in Greece, Hippocrates produced narcosis by the inhalation of the vapor of bhang, or Indian hemp.[1] In the thirteenth century in Spain, Raymundas Lullus discovered sweet vitriol. In 1546, in Germany, Valerius Cordus described the synthesis of sweet vitriol, or diethyl ether.[1] Many early dates, names, and countries are associated with efforts to produce anesthesia of a general nature in persons by the inhalation of a variety of vapors. As early as 1794, in England, Richard Pearson began to use inhalation of ether in the treatment of pulmonary tuberculosis.[1] In 1795, in England, James Watts constructed a gas inhaler for Thomas Beddoes. In 1799, in England, Sir Humphry Davy introduced the use of nitrous oxide in the medical practice at Beddoes' Pneumatic Institution. In 1805, in the United States, John C. Warren used ether by inhalation to relieve the last stages of pulmonary inflammation.[1] In the year 1842 and later, many persons administered ether by inhalation for both dental operations and general surgical operations.[1]

MANUFACTURING PROCESSES

As inhalation anesthesia gradually began to take form, the need arose for some means for the manufacture of nitrous oxide and oxygen for administration in the operating room. In 1867, the S. S. White Dental Manufacturing Company introduced an inhaler which covered the nose and mouth of the patient.[1] The next year, Edmund Willis Andrews of Chicago introduced the use of oxygen plus nitrous oxide in anesthetic practice.[1] In 1871, in the United States, the Johnston brothers accomplished the compression of nitrous oxide into wrought-iron cylinders.[1] In 1882, S. J. Hayes developed an apparatus for generating and applying anesthetic agents, and he applied for a patent.[1] Mixtures of ether and chloroform were heated by means of a water bath. Air was pumped through the mixture and was thereby charged with the anesthetic vapor.

Personally, I found it necessary to have Richard von Foregger construct for me in 1923 the Seattle model of his gas machine for the use of nitrous oxide, ethylene, carbon dioxide, and oxygen plus an ether bottle.[1] In 1924, J. A. Heidbrink constructed a gas machine for me for the administration of the same agents.[1] The Heidbrink machine had, in addition, an automatic shut-off valve which was adjustable and was operated by bag pressure.

In this early period of the twentieth century, oxygen was administered by means of a gas machine, and it was not long before it was decided to make oxygen tents. One of the first of these, which I used, was the Collins tent. This was round, and it hung from a spring like a large bird cage. Soon afterward tents were made

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which were considerably more complicated and in which the enclosed atmosphere was circulated by an electric pump. Ice was added for cooling effect. I added the thermometer and began to number the gas machines so that a record might be kept of the frequency of their use and the status of their cleanliness.

FAILURES AND HAZARDS

Possible failures of performance and the hazards of accidents in the use of tents made it imperative to draw up regulations which would encourage and ensure, as far as possible, the best technical performance of the apparatus. Fires constituted a hazard that had not been anticipated, so that regulations also had to be made for the prevention, as far as possible, of this hazard.

PULMONARY VENTILATION

I think the years 1897 and 1898 were significant in our recital because at that time Rudolph Matas in New Orleans modified the Fell-O'Dwyer apparatus for the relief of acute surgical pneumothorax.[1] This provided for the maintenance of anesthesia during artificial respiration. For a long time, and, in fact, until well into the 1930s, pneumonia was of prime concern to us because it was lobar in character. Since that time what used to be called "lobar pneumonia" has been given a nomenclature which depends largely on the causative factors involved. It has been some time since what we once knew as "lobar pneumonia" has had to be dealt with in the modern practice of medicine. Formerly, the difficulty of assuring pulmonary ventilation under conditions accompanying lobar pneumonia required a variety of efforts for the patient to be able to obtain enough oxygen by inhalation to survive. I recall very well the efforts of the late Dr. John E. Crewe, of Rochester, Minnesota, who rigged up a series of small pipes similar to stovepipes, except that they were about 6 in. in diameter; through these pipes he conducted cold winter air from the outside to a patient's face as he lay in bed trying to recover from lobar pneumonia. Dr. Crewe was convinced that his apparatus was very helpful and effective.

Inevitably, as time passed, various regulations were framed and some came to be accepted by a variety of agencies. The American Medical Association has contributed to this endeavor and so have several governmental agencies.

DEFINITION OF TERMS

In technical discussions, such as the present one, definitions should apply to the terms that are being used so that there will be as little misunderstanding as possible. Reference to the word, inhale, in the current edition of *Webster's New Collegiate Dictionary*, shows that the word is almost pure Latin, derived from the infinitive, inhalare, meaning "to breathe or draw in, esp. into the lungs."[2] An inhaler is said to be a person who inhales or an apparatus for administering medicinal vapors by inhalation. The same dictionary, in defining therapy, gives the source as a Greek word meaning "treatment of disease."[2] Similarly, our word, therapeutic, is derived from what originally was a Greek noun designating an attendant or a servant or one who treated medically. Therapeutics is defined as that branch of medicine which concerns the treatment and cure of diseases.[2] In a medical dictionary, therapeutist is described as denoting a physician especially skilled in treating disease; therapist is noted to be synonymous with therapeutist; and therapy means the treatment of disease. In the current edition of Taber's *Cyclopedic Medical Dictionary*, therapy is defined as the treatment of a disease or pathologic condition.[3] In the same dictionary, inhalation is defined as the act of drawing in a breath or vapor or gas into the lungs—in other words, an inspiration.

A second meaning of the word, inhalation, is the one with which we are concerned here; this is the introduction of dry or moist air or vapor into the lungs for therapeutic purposes. The standard textbook on the subject is *Inhalation Therapy and Resuscitation*, by Meyer Saklad, M.D.,[4] of the Rhode Island Hospital, Providence. Chapter 1 of this book gives the history of this particular field. Dates in the author's text are at some slight variance with those which I have given in this paper, but he does emphasize the importance of the slowly developing subject of circulation and metabolism and recognition of the function of oxygen, carbon dioxide, and air itself.

THE IMPORTANCE OF PARTIAL PRESSURE

A hundred years ago, Paul Bert[5] demonstrated that mountain sickness is not caused by low barometric pressure but by a decrease in the partial pressure of oxygen. He built an oxygen chamber with which he demonstrated and proved his point. I recall the oxygen chamber with 2 rooms which was in use at the Mayo Clinic in Rochester, Minnesota, when I went there in 1924, but this oxygen chamber ceased to be used when satisfactory oxygen tents became available. These devices were under the supervision of the late Dr. Walter M. Boothby. He had worked with F. J. Cotton on the development of an apparatus for administering nitrous oxide and oxygen, and he was brought from Boston to Rochester, Minnesota, to direct the laboratory of metabolism of the Mayo Clinic. There he worked with Dr. Henry S. Plummer on problems of the thyroid gland.

AUTOMATIC RESPIRATORS

The importance of anterior poliomyelitis, as it afflicted the population of the United States, resulted in the development of the Drinker-Collins respirator in which the patient could be given artificial respiration and cared for while still encased in a large metal cylinder which allowed his head to be outside. Various apertures were placed in the cylinder to permit nursing care. I recall very well the days before apparatus was available for the provision of automatic artificial respiration for patients who had poliomyelitis. Many times I helped to maintain artificial respiration among such patients, with little prospect of lasting success.

I recall one woman in particular, a victim of the paralysis of poliomyelitis. She was in an automatic respirator when she gave birth to an infant which was found to have poliomyelitis. So far as I know, that incident represented the earliest time at which the diagnosis of poliomyelitis can be made, although the infant must have had the disease before birth.

PERSONNEL IN INHALATION THERAPY

At present, a number of companies are providing the necessary mechanical equipment and compressed gases and medications so that patients in or out of the hospital can be treated by inhalation therapists. Just as was true in the early days of gas machines, those who demonstrate modern equipment for both anesthesia and inhalation therapy often are lay people. Of course, the existence of any company which supplies equipment and materials must depend upon sale of the company's products. Many of the manufacturers are not physicians; as a matter of fact, they seldom are. But they are supplying physicians with what physicians need in carrying on their work, and they must use lay people as salesmen and demonstrators. This practice is similar to that of the pharmaceutical manufacturers, except that drug makers try to employ persons with degrees in pharmacy.

In the field of inhalation therapy, of course, it is desirable that some sort of title be available to those who are going to spend their time in this particular endeavor. Currently, it is important that certain standards be set up for determining the qualifications of inhalation therapists. Rather formal efforts were made toward this objective in 1962 by those interested in diseases of the chest and others interested in anesthesia. As I see it now, the persons in inhalation anesthesia who will be in demand will be those most readily available, night and day in the hospital, to provide help in making rapid and effective use of the apparatus and agents to be used in inhalation therapy.

THE VITAL IMPORTANCE OF ADEQUATE INHALATION

But there is more to it than this. The medical experts in pulmonary physiology, pathology, and pharmacology must shoulder their share of the responsibility for the application of, and the results from, the activities of the inhalation therapist. It is true that these activities at present are not universally categorized, but in time they are certain to become almost routine. It is on the subject of the future of inhalation therapy that I should like to direct a few remarks. It will be unfortunate indeed if the same tendency which has developed in general anesthesia should become prominent also in inhalation therapy, and by this I mean neglect of the prime importance of the word, inhalation, in all the vital significance of that term. This I can explain very simply.

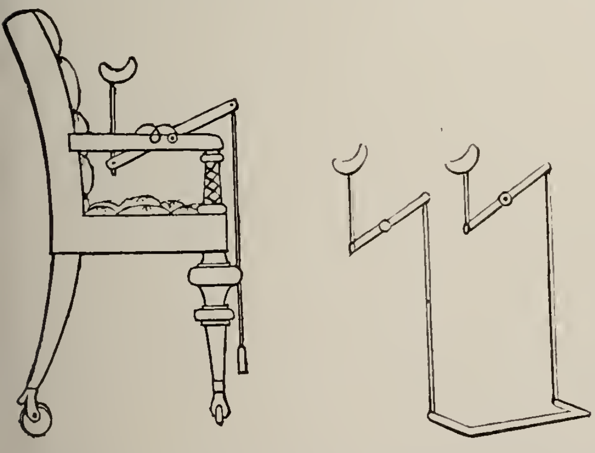
THE HEART AND CIRCULATION

It must be remembered that, in either the sick or the well, the circulation of the blood is the *sine qua non* of the process of life. Without it, all vital functions must come to a halt. Obviously, there is no point in attempting to administer any inhalation agent to a patient whose circulation is failing or has failed, for he will not be able to breathe and it would do him no good if he could do so, even with the help of artificial respiration. What has to be remembered is that the little pump (the heart) is located inside the big pump (the chest) for functional reasons. This is a physiologic fact of paramount importance.

Now, since the introduction of muscle relaxation, an increase in cardiac arrests has occurred, resulting from the fact that the thoracic and abdominal musculature was paralyzed during operations in which muscle relaxants were employed. The persons who administered the anesthetic agent as well as the muscle relaxant were confident that they could maintain breathing in the patient if they would alternately squeeze and relax the squeezing bag of the gas machine. Yet the fact is that this so-called assisted respiration does little more than ventilate the lungs with the atmosphere contained in the bag on the gas machine. Hence, the basic premise of this type of assisted respiration is false. To call attention to the very real hazards of assisted respiration carried out in the operating room, I have tried to give wide circulation to the slogan, "Let them breathe and let them live."

Even a machine designed expressly for artificial respiration (figure)[6,7] cannot do as good a job as the patient can do for himself if he can do at least some of his own breathing. It might be well to remember that if you were called upon to invent a new race of people who were to resemble us, you would have to make the decision as to where you would place the heart. If you decided to use the same kind of heart that we have, it would have to be placed within the chest so that the movements of the chest would provide some of the negative pressure which the heart, by itself, cannot produce. This negative pressure is required for the heart to become filled with blood and then, in turn, for the heart to be able to force the blood through the arteries and other vessels to maintain circulation.

Now, at this point I should like to emphasize a physiologic action which I hope will be kept in mind by all who are engaged in inhalation therapy. It is this: As the patient inhales or the chest expands, a degree of negative pressure is produced inside the chest, while at the same time the diaphragm descends and increases intra-abdominal pressure. The increased pressure within the abdomen tends to force blood up the veins, and as blood proceeds from one venous valve to another, it can approach the heart and find its way into the auricles on the right side of the heart and, from there, travel to the right ventricles and thence through the pulmonary artery to the lungs. There, because of the respiratory process, it becomes available to inhalation therapy. From the lungs the blood will go back to the left auricle and from there to the left ventricle and onward into the rest of the body.



This odd device for the self-maintenance of artificial respiration was described by Percy Leslie,[6] of Birmingham, England, in 1869. In 1960, W. Stanley Sykes,[7] of Leeds, England, commenting on this weird device, wrote: "Artificial respiration apparatus. A chair fitted with a treadle, which lifts the patient's arms. The dyspnoeic or collapsed patient, who is already short of breath, or he would not be needing artificial respiration, is apparently expected to pedal like hell and do his own 'assisted breathing.' Really, Mr. Leslie! This is one of fifty methods of artificial respiration of which I have photographs, but none of the others are as daft as this."

I earnestly hope that those of you who plan to pursue some sort of career in inhalation therapy will never forget the importance of the circulation of the blood nor yet the prime necessity for the patient to do his own breathing. Recognition of these two major facts, and actions based upon them, should be essential parts of the ministrations carried out by anyone in this field.

ARTIFICIAL RESPIRATION

Actually, there are times when we cannot do without manual artificial respiration. This is well recognized in the case of victims of electric shock who are unable to help themselves. If the victim is, say, a lineman, the person who is to give first aid may have to crawl up the transmission pole and put his arms around the victim and alternately compress and expand his chest by hugging him. But when we consider that such an effort, carried out under such extreme difficulties on a pole high above the ground, can be effective and even lifesaving, how much easier it ought to be for the person administering artificial respiration to do it on an operating table or in a hospital bed or even on the ground.

OXYGEN MAY NOT BE ENOUGH

I am particularly concerned about the welfare of the patient who is in an oxygen tent.[8] He is usually regarded as being fairly well protected, yet all kinds of activities foreign to his needs can take place in a hospital room, and he can be exposed to much bustle and confusion unless someone is in charge of him. Even if someone is attending him, too often that person's authority is not recognized. We all know how easily cessation of breathing can become fatal, and this danger is compounded if the status of the patient's breathing cannot be readily observed in the oxygen tent. Under such circumstances the patient may not survive, even though all the oxygen-therapy equipment is working at full efficiency.

These examples of possible disasters should tell you why I repeat that the word, inhalation, in "inhalation therapy" should be kept in mind constantly and why it is indubitably the more important of the two words in the term. The word should always be the chief one in your mental image and in your actions as you carry out inhalation therapy.

KNOWLEDGE OF ANTAGONISTS

Primary among the therapeutic agents with which you should be familiar are those which will stimulate respiration, such as nalorphine hydrochloride (Nalline hydrochloride), levallorphan tartrate (Lorfan tartrate), and ethamivan (Emivan). Even if you are not in a position to use these agents therapeutically, you should know about them so that you might call for them and for somebody who will be able to administer them.

SUMMARY

The importance of adequate inhalation by the patient has not been sufficiently emphasized and, as a consequence, is often overlooked. It will not be too long before definite regulations concerning the practice of inhalation therapy will have to be promulgated by some authority just as similar regulations are needed now in the field of general anesthesia. I have dwelt at some length on some of the events in inhalation therapy which led up to the present status of this field. I have also enlarged upon the usual interpretation of the word, history, because I think it ought to include some intimations of the future as well as the events of the past.[9] I believe I have shown that one does not need much prescience to be able to recognize that the future of inhalation therapy will depend upon how much attention is paid to the term, inhalation, as well as to the term, therapy.

Read at the refresher course for Illinois Inhalation Therapists, Oak Park Hospital, Oak Park, January 31, 1963.

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Editor's Note: In the article "Chronic Debilitating Pain," Januar 1963, the sentence on page 26 which read:

> "I performed a block procedure on the anterior, lateral, and posterior frontal cutaneous nerves, using PAB_2 solution."

should be changed to read:

> "I performed a block procedure on the anterior, lateral and posterior *femoral* cutaneous nerves, using PAB_2 solution."

Searching for the Cause of Obscure Pain and Finding It

BAYARD T. HORTON, M.D.

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SOME TIME ago an old friend and patient of mine stopped at my office for a brief visit. He was a wonderful man, a year shy of 60, with an alert, active mind. "I just stopped for a moment to say hello and to let you know I'm in Rochester," he said, and added, "Maybe we can get together later this evening for a more prolonged visit." "Sit down, Frank," I said, "I can spend at least a few minutes chatting with you." "No," he replied, "I will contact you later." After turning to leave the office, he stopped and said, "You know, Doctor, every time I sit down, I have pain in my buttocks. As long as I'm standing or walking, I never have pain, but the moment I sit down the pain comes on—that's really why I came to Rochester, and I wanted to talk with you about it before I register in the clinic."

He said he had had the pain for about four months and added, "This probably sounds like a strange complaint to you; at least, I have not found a doctor who has ever encountered this type of pain." After a moment, he continued, "You know when I first came to see you in May 1951, I had a peculiar type of head pain—the worst any human being could experience. But after nine weeks of treatment, you cured me. For nearly six years, now, I've been free of those horrible head pains which had occurred two to four times a night for two years before you treated me." He reminded me that the pains in the head had begun about twelve years before I saw him. At first, they had occurred infrequently, but then they had become more frequent and severe. They had occurred nightly for two consecutive years before I treated him. I had diagnosed the headache as histaminic cephalgia or Horton's headache.

HISTORY

He remained standing, and, obviously anxious to continue to tell me about his current problem, he told me this story:

In February 1950, he first consulted his urologist, who was suspicious of a nodule in the right lobe of the prostate gland, but a needle biopsy revealed no evidence of malignancy. In March 1951, the patient experienced symptoms of urinary obstruction and had to use a retention catheter for a short time. The obstruction cleared up without operation and he was able to void normally. However, months later he again experienced some obstructive symptoms and, in May 1953, his urologist performed a transurethral prostatic resection. The tissue removed was benign.

In May 1956, the patient passed some blood in the urine and immediately consulted his urologist. Cystoscopy revealed no evidence of bladder tumor and roentgenograms of the kidneys were normal. A month later, the patient first noted pain at the tip of the coccyx when he sat down. In discussing this complaint with his urologist, however, he vaguely recalled that, on one or two occasions during the previous twenty-five years, he had had fleeting pains of the same type. In each instance they had lasted for only a day or so and then had completely disappeared.

Not until December 15, 1956, did the pain become constant when the patient sat down. After he again examined the patient, the urologist said the right lobe of the prostate was enlarged and firm, whereas the left lobe was not enlarged and seemed normal to palpation. He thought the patient might have an abscess in the right lobe of the prostate gland and treated him with antibiotics. On December 26, the urologist, while searching for the cause of the pain, discovered that, when he filled the patient's bladder with a 1 per cent solution of piperocaine hydrochloride (Metycaine), the pain at the tip of the coccyx completely disappeared. Relief of the pain lasted as long as the piperocaine remained in the bladder.

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On December 28, a transurethral resection of the right lobe of the prostate yielded only a small amount of prostatic tissue. Careful examination of the tissue did not show any evidence of malignancy.

For the three months preceding the visit to my office, the patient had been feeling quite well and had worked daily, standing at his desk. Some weeks before this visit the urologist had injected procaine hydrocloride (Novocain) around the tip of the coccyx; this, also, had stopped the pain completely.

A comprehensive and instructive letter from the patient's urologist, dated March 6, 1957, confirmed the story in every detail. He emphasized that he had suspected malignancy of the prostate when he originally saw the patient but that biopsy of the prostate gland in February 1950, May 1953, and December 1956 failed to show any evidence of malignancy. He said the discomfort in the perineum could be temporarily stopped by filling the bladder with a solution of piperocaine or by injecting the tip of the coccyx with procaine. Roentgenograms of the bones of the pelvis revealed no evidence of metastasis. The urologist could not demonstrate any significant abnormality of the upper urinary tract.

A letter from the patient's proctologist indicated that there was no lesion in the rectum or lower bowel which in any way could contribute to the patient's symptoms.

The patient registered at the Mayo Clinic on March 12, 1957. General and neurologic examinations revealed no significant objective findings. A burning pain, localized at the tip of the coccyx and tending to radiate into the right gluteal region, could be elicited by having the patient sit down. Blood pressure measured 130 mm. Hg systolic and 84 diastolic. The blood urea measured 28 mg. per 100 milliliters. The urologist said the right lobe of the prostate was stony hard and slightly enlarged. He thought it was malignant and recommended transrectal biopsy.

This was done on March 18, anesthesia having been obtained with a combination caudal and sacral block. A Silverman needle was twice inserted transrectally into the firm area of the right lobe of the prostate, but a satisfactory core of tissue was not obtained. Then a small slit, 1 cm. long, was made through the rectal mucosa, and two small specimens were removed with a biopsy forceps. The pathologist reported: "slightly inflammatory muscle." Prostatic tissue was not evident in the specimens removed.

The following morning, I visited the patient, who was sitting in a wheel chair. He was cheerful and jokingly remarked, "You know, doctor, I slept fine last night, and I have not had to pass any urine since the operation." (He was unaware of the seriousness of this development.) He was destined never to void normally again. Severe oliguria persisted, and on March 22, a cystoscopic examination was performed; a topical anesthetic was used. No obstruction was evident in either ureter. (Cystoscopy had not been performed before the transrectal biopsy.) There was no satisfactory explanation for the kidney "shutdown," particularly since the patient's record indicated that the blood pressure was checked at frequent intervals during and for ten hours after the operation and that no episodes of hypotension had occurred.

The value for blood urea rapidly rose to 336 mg. per cent and, on March 23, the patient was suddenly seized with retrosternal pain. He died shortly thereafter. Clinically, he died of a myocardial infarction and uremia. Necropsy revealed an anterior subendocardial infarct. The kidneys were hypertrophied and, on microscopic examination, lower nephron nephrosis was evident. The prostate gland was small and firm. On cut section, some small whitish areas measuring about 3 mm. in diameter were seen in the posterior wall. The pathologist could not make a diagnosis of carcinoma of the prostate on the basis of the gross examination. Thus, the postmortem examination did not promptly disclose the cause of the patient's pain.

It was not until April 23, a month after the patient died, that the pathologist finished his study of serial sections of the prostate gland and the surrounding region. Some sections showed small microscopic areas of carcinoma of the prostate, and several sections showed that malignant cells had infiltrated around the nerve endings in the prostatic bed and in the periprostatic region. The latter findings almost certainly accounted for the pain, hence the title of this paper: "Searching for the Cause of Obscure Pain and Finding It."

The Pharmacology of Pain Control

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THE CONTROL OF PAIN by drugs today is almost totally empirical. Despite much study, including electropharmacologic investigations, the sites and modes of action of analgesics remain obscure. Many responses formerly attributed to cortical effects now are ascribed to alterations in various diencephalic and mesencephalic systems. The technics of enzymology have yielded fragments of information at the micellar level; these serve largely to emphasize the enormous complexity of the enzyme matrix.

As neuropharmacology is gross and imperfect, so pain therapy must be empirical and pragmatic. Clinical observations, however unsystematized, remain our chief source of information on analgesic drugs. Collateral data, such as electroencephalographic observations, are interesting, but conclusions drawn from them are still imperfect and controversial.

MEASUREMENT OF PAIN

The evaluation of clinical pain is largely a subjective process. As Beecher has repeatedly demonstrated, there may be little correlation between pain and injury. The extent of tissue damage does not correspond to the degree of discomfort; severely wounded men do not consistently complain of pain.

Two neurophysiologic phenomena are usually described as constituting the sequence of pain perception. The first is "the original sensation of pain," depicted as an afferent impulse carried from the site of injury to the cord by way of the dorsal root ganglion and then through the spinothalamic and corticothalamic tracts to the cerebral cortex. The thalamic relay is characteristic. Experimental evidence has established the fundamental importance of the diencephalic centers in pain perception. This is a relatively simple transmissive process and is measurable by the technics of Wolff, Hardy, Goodell, et al. Subjective response in man is reasonably uniform, and a scale of pain intensity can be constructed.

The second phenomenon is often referred to as "awareness of pain" and is considerably more difficult to define concretely. A residuum of neuronal excitation follows the original afferent volley, which reverberates through certain transactional components of the nervous system, namely, the reticular formation and the internuncial neurons of the cord. The transmission is multisynaptic, in contradistinction to the paucisynaptic course of the primary afferent impulse. By means of these multisynaptic connections with the thalamus and hypothalamus, painful sensations are modified, and their conscious interpretations are determined. Virtually our only method of study of this type of pain is statistical observation of relief obtained by various drugs under relatively uniform clinical conditions, such as acute postoperative pain following laparotomy.

ANALGESIA

The term analgesia implies not only the relief of pain but the retention of consciousness. Herein lies the great difficulty in pain control, that is, to reduce pain with sufficient selectivity to avoid prolonged amnesia or somnolence. If the analgesic requirement is moderate, the patient must usually remain ambulant. When general anesthesia must be employed, immediate postoperative awakening is highly desirable. The primary therapeutic aim is to obtund pain to the maximum degree consistent with the conscious state. Thus, the ideal analgesic drug should relieve pain without marked sensorial impairment.

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In addition, side actions, such as respiratory and vasomotor depression, nausea and vomiting, and development of physical dependence, should be minimal. Rapidity of onset and prolonged duration of analgesia are desirable. Finally, the drug should be effective by all routes of administration—particularly the oral route.

Relief of pain by drugs may be accomplished by the following pharmacologic mechanisms:

1. *Removal of the pain stimulus.* Coronary vasodilators, such as nitrites, relieve anginal pain by alleviating myocardial ischemia. Similarly, pain caused by smooth muscle spasm, such as that in biliary or renal colic, may be relieved by antispasmodics.

2. *Blockade of afferent pain impulses along neuronal pathways.* This is accomplished by direct application of local anesthetic agents.

3. *Reduction of central reception of pain.* Here the effect is presumed to result from depression of the diencephalic relay centers, particularly the thalamus, and the corticothalamic radiation. This is characteristic of the morphinoid narcotics.

4. *Alteration of reaction to pain.* This may be described as a damping of multisynaptic reverberation accompanying the primary pain stimulus. Almost all cortical depressants provide some analgesia in this manner. Alcohols, chloral hydrate, scopolamine, barbiturates, and phenothiazines can be useful if properly employed, but effective analgesia is usually accompanied by sensorial impairment. Loss of orientation in the presence of inadequate analgesia may result in delirium.

The antipyretic analgesics probably also belong in this category, although their mode of action is obscure. Their action as febrifuges directs attention to the hypothalamus, although other autonomic functions are altered but little. As a class, their analgesic potency is quite limited.

5. *Obtundation of consciousness.* Analgesia for relief of severe pain can be obtained only with considerable sensorial loss. Volatile anesthetic agents and ultrashort-acting barbiturates may be employed to produce a "general analgesia" or "stage I anesthesia." This is especially useful for brief and self-limited situations, such as removal of painful dressings or surgical drains, extraction of teeth, or intermittent analgesia during labor.

RELIEF OF SEVERE PAIN

Between mild degrees of pain, which are satisfactorily controlled by antipyretic analgesics, and pain so severe it must be relieved by general anesthesia, lie the present problems of analgesia. Sharp, lancinating pain of somatic origin or the pain of visceral distention or spasm requires highly potent drugs which do not markedly impair consciousness. Morphine and its congeners, usually termed "narcotics," are highly specific drugs producing a well-known syndrome: respiratory depression, cholinergic effects, and the rapid development of physical dependence. A significant identity among narcotics is the universal specific antagonism of drugs like nalorphine and levallorphan to all of them. Evidently there is something unique about the narcotic molecule which permits structural variation within relatively narrow limits without loss of potency. Particularly, it has been impossible to synthesize a potent narcotic which is nonaddicting.

It is difficult or impossible to obtund pain in many clinical situations without employing narcotics. Two lines of development have tended to mitigate their untoward effects. First, the discovery of antinarcotics enables the clinician to use morphinoid drugs more freely, secure in the knowledge that a condition of overdosage can be successfully retrieved. This has been of especial value in obstetrics. Second, a number of relatively nonspecific central depressants may serve as narcotic potentiators, permitting the use of smaller doses of opiates. Narcotic reinforcement was first developed by the concomitant use of scopolamine in "twilight sleep" for obstetric delivery. Barbiturates, phenothiazines, and mephenesin-like tranquilizers are of some value as narcotic potentiators, but analgesia is often obtained at the price of considerable sensorial impairment.

Persistent, intractable pain is ordinarily best treated by neurosurgical methods. If the pain can be accurately localized, section of sensory or sympathetic nerve roots or tractotomy are often quite satisfactory. Psychosurgical procedures, such as prefrontal lobotomy, are less effective. Local anesthetic agents can be employed to advantage as diagnostic aids. The offending pain pathways can be determined by nerve blocks and definitive results then obtained through surgical extirpation. Injections of nerve roots with alcohols, phenols, or other neurotoxic agents are now used less frequently, since localization is less accurate, results may be only temporary, and damage to surrounding tissues may be extensive.

SUMMARY

1. The measurement of clinical pain must be based almost entirely upon response to analgesic drugs.

2. Drug-induced analgesia may be accomplished by removal of the pain stimulus, afferent nerve blockade, reduction of central reception to pain, or alteration of the subjective reaction to pain.

3. Narcotics represent only a limited approach to the control of chronic pain.

4. Neurosurgical interruption of sensory pathways may be of considerable value for treatment of long-term, intractable pain.

5. Local anesthetic agents may be useful for diagnosis but should be employed for definitive therapy only in painful conditions of limited duration.

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Book Review on Pain

BLOOD VOLUME, by S. N. Albert, M.D., 1963. Springfield, Illinois: Charles C Thomas, 175 pages. Illustrated. $8.50.

The publication of this monograph testifies to the resurgence of clinical interest in blood volume measurement. Physiologists have kept an intensive interest in blood volume studies since the introduction of the dye method in 1914, but their publications are concerned with technics and validation of methods by comparisons of one method with another. This monograph suitably emphasizes the value of bood volume measurements in practice, particularly in anesthesiology. The work reported was carried out by Dr. Albert at the Anesthesia Laboratory in Washington Hospital Center, Washington, D. C. Dr. Albert is also known for his invention of the radiocoil.

The first part of the monograph recites some commonly observed dynamic changes in blood volume during and after anesthesia. Preoperative blood volume determinations "served to establish a baseline that would determine the advisability of post-operative blood transfusions." The frequent occurrence of hypotension following introduction of anesthesia, in some instances, is due to diminished blood volume not apparent before anesthesia. Dr. Albert also emphasizes the possibility of circulatory overload appearing for the first time in a patient with chronic pulmonary insufficiency following anesthesia. Additional information is given on changes that occur as the result of blood loss and the occasionally crucial importance of blood volume measurements to assess this loss.

The second part of the monograph is a discussion of the technic of iodine 131-labeled albumin plasma volume method and the chromium 51-labeled red cell method. In respect to the former, it would be well to emphasize that there is no clinical means to validate a plasma volume measurement, since all substances diluted in the plasma undergo a disappearance from this space simultaneously with mixing. This has proved to be true for dyes, and evidence accumulates that it is also true of isotopes bound to albumin. The procedure of constructing a graph displaying the concentrations of the indicator at stated intervals following injection and extending the line of this graph to the so-called zero time intercept is a species of averaging. This procedure has the virtues of a mean value but is without physiologic validity. Dr. Albert considers this question and wisely reaches the conclusion that, while all methods fall short of precision, the clinical usefulness of a plasma volume estimate outweighs this drawback. Dr. Albert also discusses the vexing problem of trapping in which a portion of plasma in the red cell column in centrifugation is read as part of the hematocrit. As so many others do, he cites the experiments of Chaplin and Mollison* and uses their values for estimating the trapping error. My objection to this procedure is that Chaplin and Mollison's experiments were performed on an artificial setup: They removed the buffy coat layer. Much of the trapping of plasma occurs in the buffy coat. While their experiments correctly ascertained the amount of trapping due to the red cells, themselves, in practice, centrifugation of blood is carried out with the buffy coat present. This, coupled with the difficulty of estimating the buffy coat thickness, has made me somewhat skeptical about the almost universal application of the Chaplin and Mollison correction.

The second difficulty in estimating red cell mass from a plasma volume determination centers around the disproportion between the percentage of red cells existing in a peripheral vein as compared with that existing throughout the body. This is the familiar "body hematocrit" or, as the physiologist prefers, "mean hematocrit" (abbreviated Hm). If Hm is taken to represent the mean hematocrit of the blood and Hc to represent the hematocrit as determined in the peripheral vein (or artery), corrected for trapping, the ratio of the 2 is less than unity and very likely close to .91 in the normal individual and in some disease states. However, evidence is quite convincing that in splenomegaly this ratio is unity or greater than unity, and it may be less than .91 in congestive heart failure. Surely, then, for precise determination of blood volume, plasma volume and red cell mass should be measured separately. Computing the total blood volume from a measurement of only one of the constituents requires an assumption concerning the ratio of Hm to Hc, and this may be incorrect.

A few errors appear; for example, the table on page 152 contains instructions for calculating the volume necessary to obtain microcuries of dosage. It should be pointed out that, in the calculation, the decimal point in the decay factor should be omitted. In table 16, the correction for a hematocrit of 22 per cent is out of line for the corrections to be applied for hematocrits somewhat greater and for those somewhat less.

The book is recommended for: (1) those who are not familiar with blood volume measurements and who anticipate beginning them, (2) those practitioners and surgeons who are not fully in sympathy with the physiologic measurements that anesthesiologists and internists think necessary before and after surgical procedures, and (3) those who are not yet aware of the help that the skilled anesthesiologist can give them and how truly scientific anesthesiology has become.

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*CHAPLIN, H., JR., and MOLLISON, B. L.: Correction for plasma trapped in the red cell column of the hematocrit. Blood 7:1227, 1952.

Current Literature on Pain

ALTERATIONS IN RESPONSE TO SOMATIC PAIN ASSOCIATED WITH ANAESTHESIA. XI: TWO NON-PHENOTHIAZINE ANTI-EMETICS: CYCLIZINE AND TRIMETHOBENZAMIDE, by R. M. NICHOLL, JAMES MOORE, and J. W. DUNDEE: Brit. J. Anaesth. 34:287-289, 1962.

While the largest number of antiemetics in clinical use are phenothiazine derivatives, their toxicity should preclude their widespread application. . . . Because of this toxicity, attention has focused on the nonphenothiazine antiemetics, and this paper deals with 2 of these: cyclizine and trimethobenzamide. Cyclizine hydrochloride, a member of the antihistamine group of drugs, has been used in anaesthesia solely for its antiemetic effects. . . .

Studies in animals and humans have shown that trimethobenzamide is an almost specific antimetic. . . . There are few reports on its efficacy in anaesthesia, but in the treatment of nausea and vomiting due to other causes it has been found to be of definite value. . . .

Analgesimetry studies were carried out on healthy subjects. . . . An increase in sensitivity to somatic pain followed the intravenous injection of clinically used doses of both drugs, but this action was more marked and prolonged with cyclizine. Following intramuscular injection. an antianalgesic effect was present sixty to ninety minutes after cyclizine but not after trimethobenzamide. The latter had no effect on pethidine analgesia.

The antianalgesic action of cyclizine is associated with a very high incidence of excitatory phenomena following methohexitone, and it is not recommended for use in preanaesthetic medication before methohexitone induction of anaesthesia.

From LUNDY, J. S., and MC QUILLEN, F. A.: Anesthesia Abstracts. Minneapolis: Burgess Publishing Co., 1962, vol. 59. Copyright by J. S. Lundy.

ALTERATIONS IN RESPONSE TO SOMATIC PAIN ASSOCIATED WITH ANAESTHESIA. IX: The EFFECTS OF HYPERCARBIA AND CATECHOL AMINES, by J. W. DUNDEE, G. W. BLACK, and R. M. NICHOLL: Brit. J. Anaesth. 34:24-30, 1962.

The present study was undertaken to re-examine the analgesic action of carbon dioxide by means of a different method of analgesimetry and also to explore one of the possible mechanisms involved. . . . The results of the hypercarbia studies prompted an investigation of the analgesic action of adrenaline and noradrenaline, and these studies were carried out entirely on the authors and their colleagues. . . .

With the aid of a method of analgesimetry based upon the measurement of the pressure which, when applied to the subcutaneous surface of the tibia, would produce pain, it was shown in man that the inhalation of carbon dioxide produced marked and consistent analgesia. This was noted both when this gas was inhaled directly in concentrations of 5 to 10 per cent and when endogenous carbon dioxide was allowed to accumulate during 10 minutes' rebreathing in a closed circuit. It was not possible to demonstrate a quantitative relationship between the degree of hypercarbia, as assessed by end-tidal carbon dioxide pressure, and increase in analgesimetry readings.

It seemed that the analgesic effect might be mediated through the release of catechol amines, which is associated with hypercarbia. This was to some extent confirmed when it was demonstrated that 5 μg. of adrenaline per min. infused intravenously into volunteers over four minutes produced a rise in analgesimetry readings. Noradrenaline in similar quantities, however, had no such effect.

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OBSERVATIONS ON THE PREVENTION OF MUSCLE PAINS AFTER SUXAMETHONIUM, by D. C. WHITE: Brit. J. Anaesth. 34:332-335, 1962.

The occurrence of muscle pains following the administration of suxamethonium is one of the commonest causes of postoperative discomfort. These pains are so common and sometimes so severe, especially in patients who are ambulant within forty-eight hours of operation, as to constitute a serious drawback to the use of the drug. . . . The cause of the muscle pains is not known. . . .

The observations reported here were made to discover if the incidence of muscle pains was affected by a smaller dose of a curariform relaxant (5 mg. of gallamine) than that previously employed for this purpose. Observations were made to ascertain the importance of a time interval between the injection of gallamine and that of suxamethonium. In addition, observations were made on the effect of the speed of the injection on the incidence of muscle pains. . . .

The incidence of muscle pains produced by suxamethonium in patients undergoing bronchoscopy was reduced from 50 per cent to 28 per cent by previous injection of a 5-mg. dose of gallamine. The severity of the pains was also greatly reduced. To obtain this effect it was essential to allow time for the gallamine to act before giving the suxamethonium. Two minutes were allowed in this series. Slow injection of suxamethonium did not significantly alter the incidence or severity of the pains.

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CAUSE OF PAIN FROM A PNEUMATIC TOURNIQUET DURING SPINAL ANESTHESIA, by L. D. EGBERT and T. C. DEAS: Anesthesiology 23:287-290, 1962.

In the present study, we have administered spinal anesthesia using 2 different doses of tetracaine in order to evaluate the influence of the concentration of a local anesthetic agent on the incidence of pain from the pneumatic tourniquet. . . . All observations were made on patients undergoing orthopedic operations on the leg. . . .

The anesthetist recorded the level of anesthesia to pinprick and whether or not the patient could move his feet at the time the operation began. A wide-band tourniquet was applied over Webril padding and then inflated to a pressure of approximately 550 mm. Hg. If the patient complained of pain during the operation, we recorded a description of the pain, the level of analgesia to pinprick, and whether or not the patient could move his feet. If the patient was free of pain throughout the operation, the same observations were made at the end of the operation, that is, when the tourniquet was removed.

Four groups resulted: those patients with pain and those without who had received 12 mg. of tetracaine and those patients with pain and those without who had had 16 mg. of tetracaine. Differences between these 4 groups were analyzed. . . .

Spinal anesthesia was administered to 106 patients. . . . When 12 mg. of tetracaine were given for anesthesia, the incidence of pressure-pain resulting from the tourniquet was significantly greater than when 16 mg. of tetracaine were used. The patients with pain had approximately the same levels of analgesia to pinprick as those patients who were free of pain; the duration of tourniquet pressure was no longer for the patients who experienced pain than for those patients who had no pain.

We have concluded that although spinal anesthesia may adequately block the sensation to pinprick by small nerve fibers, it may not produce a sufficiently high concentration of local anesthetic to block the large nerve fibers transmitting pressure-pain sensation.

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NERVE INJURY FROM INTRAMUSCULAR BARBITURATE INJECTION, by R. K. RICHARDS: Clin. Pharmacol. Ther. 2:262-265, 1961.

Intramuscular injection is a commonly used and, in general, safe method of drug administration. . . . A case of damage to the sciatic nerve after amobarbital sodium injection came to our attention recently. A search of the literature unearthed only 2 reports of this type with an injectable barbiturate. . . . No report of nerve damage following intramuscular administration of amobarbital or pentobarbital was found. . . .

A 60-year-old white man, whose history included mild, controlled diabetes and a subtotal gastrectomy for a benign polyp of the stomach, was hospitalized because of postoperative adhesions. The patient had suffered a shrapnel injury to his left leg. . . . Following the operation for adhesions, amobarbital sodium in quantities of 250 mg. dissolved in 2.5 ml. water were injected repeatedly intramuscularly into the buttocks by a nurse. Following one of such injections, the patient complained of numbness in the foot on the injected (left) side which subsided somewhat after massage. Examination by the physician indicated the presence of a needle puncture over the course of the sciatic nerve, midway between the greater trochanter and the ischial tuberosity. Pinpricks were felt in the area of numbness. A diagnosis of toxic neuritis was made. . . .

Definite sensory changes on the medial aspect of the left foot with apparently unimpaired muscular strength could not be related to the old injury and were compatible with chemical injury to the nerve fibers caused by the amobarbital sodium injection, with the subjective complaints of the patient, and with his difficulties in walking. Neurologists expressed the opinion that the sensory fibers would ultimately regenerate. . . .

A number of experiments were conducted, using a 10 per cent aqueous solution of amobarbital sodium. . . . The clinical case reported here and the experiments in guinea pigs provide evidence that intramuscular injection of a soluble barbiturate can produce nerve damage. . . . Because the possibility of severe nerve damage with soluble barbiturates is now established, the importance of anatomically correct intramuscular injection becomes clear.

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MANAGEMENT OF SEVERE RESPIRATORY INSUFFICIENCY ASSOCIATED WITH PAINFUL CONDITIONS IN THE THORAX OR ABDOMEN, by A. R. BOUTROS: Canad. Anaesth. Soc. J. 9:246-253, 1962.

During the last few years the medical profession has been faced with an increasing number of cases of severe respiratory insufficiency associated with painful conditions in the chest or abdomen. There are 2 main reasons for this phenomenon: The first is the great advance in surgery and anaesthesia, which has enabled surgeons to undertake major thoracic and abdominal operations on patients with poor respiratory reserve, such as in advanced emphysema or massive pulmonary fibrosis. The second is the increase in serious automobile accidents causing extensive damage to the thoracic cage. . . .

There is no doubt that a well-executed tracheostomy provides the best airway for a patient who is suffering from severe respiratory insufficiency, particularly if a mechanical respirator is to be used. . . . However, it is very important to realize that tracheostomy has many disadvantages, restrictions, and complications. These may, indeed, lead to the death of the patient if the medical and nursing personnel attending him are unaware of them. . . .

Medical and nursing personnel looking after these cases soon come to realize that the mere use of a mechanical ventilator is no guarantee that the patient is actually ventilating satisfactorily. Pain, bronchospasm, air or fluid, or both, in the pleural cavity; mediastinal or subcutaneous emphysema; and an uncooperative, delirious patient may all interfere and render the mechanical respirator completely ineffective. It is our belief that a continuous epidural block, plus the use of a sensitive mechanical respirator, provides the most satisfactory answer to most of these problems. . . .

When the patient has had either a thoracotomy or a severe injury to the chest, there is bound to be some degree of pneumothorax and, possibly, haemothorax on the affected side. One or more chest tubes connected to a water seal are a necessity. Great attention should be paid to the patency of these tubes at all times. . . .

Acute gastric dilation is a frequent complication of chest injuries and thoracotomies in the severely emphysematous patient. This causes marked splinting of the diaphragm and embarrassment of respiration; it is surprising how improved these patients look and feel after the stomach has been emptied. It must be remembered, however, that continuous gastric suction causes water and electrolyte imbalance, which must be corrected simultaneously.

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Whipple's Disease

Report of a Case Cured

GEORGE H. SPURBECK, M.D., and
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Fargo, North Dakota

APPROXIMATELY 100 cases of what Whipple first described as "intestinal lipodystrophy"[1] have been reported in the literature. More recently, the discovery of histiocytic, sickle-shaped inclusion bodies which take a periodic acid-Schiff (PAS) stain[2–5] has stimulated a new interest in this disease. As a result, diagnosis is made more accurately, earlier, and oftener by biopsy of mesenteric[6–13] or peripheral lymph nodes[12,14] or the small bowel.[15–17] Up until the past decade there was little to offer these patients in the way of treatment except for the hope of a spontaneous remission. Since 1952, however, a number of patients with Whipple's disease responding to antibiotics,[17] steroids,[2,5,18] nitrogen mustard,[11,19] and corticotropin (ACTH),[10,13,14,20–22] or combinations thereof, have been reported.

Our patient failed to respond to the usual symptomatic and supportive measures, antibiotics, steroids, and nitrogen mustard during several hospitalizations before and after diagnosis. Established by exploratory laparotomy and examination of mesenteric lymph nodes, the diagnosis was made six years after the onset of his illness. The combined use of antibiotics and ACTH, followed by parenteral steroids and, later, oral steroids for a short period of time, however, brought about a complete remission.

CASE REPORT

A 35-year-old white bricklayer was first admitted to the Fargo Veterans Administration Hospital on October 26, 1955. His chief complaint was of nocturnal shaking chills occurring intermittently on the average of 1 to 3 each month for one year. They were often preceded or accompanied by a backache in the lower lumbar region. During these attacks, his temperature was never elevated. The past medical and family history was noncontributory. Systemic review revealed a history of occasional stiffness of the left wrist and a weight loss of 12 lb. over the past two years.

During his entire stay in the hospital he was afebrile and asymptomatic. His first-strength purified protein derivative test was negative and his second-strength, positive 3 plus. The only abnormal laboratory findings were an elevated sedimentation rate, mild anemia, and granulocytic hyperplasia of the bone marrow. These findings remained unexplained. He was discharged on November 11, 1955, with the recommendation that he return in one year for re-evaluation if necessary.

When readmitted on January 24, 1957, he again complained of shaking chills occurring early in the morning for the past two years. These chills, unassociated with fever, did not occur at regular intervals. He would have as many as 2 or 3 each week; at other times he would be asymptomatic for one to three weeks. At this time he reported that the attacks occurred later in the morning but almost always while he was still in bed. After each episode of chills, he was fatigued for two to three hours. His weight continued to remain below normal in spite of a good appetite. The hemoglobin at this time was 14.1 gm. per cent, and the sedimentation rate was elevated. The patient was discharged on January 30, 1957, without a definite diagnosis.

The third admission was on May 25, 1960, because of weakness and more frequent, intermittent episodes of chills, followed by fever up to 102° F. A chest roentgenogram showed patchy densities in both bases, suggesting the possibility of bronchiectasis. However, a bronchogram failed to confirm this suspicion and the chest roentgenogram cleared except for some residual pleural thickening in both costophrenic regions. Radiographic examination of genitourinary and gastrointestinal tracts was normal except for an increase in transit time in the small bowel. A bone marrow study suggested lymphoma, that is, Hodgkin's disease, because of the finding of granulocytic hyperplasia with eosinophilia. A small, palpable right posterior cervical lymph node was then removed for biopsy. Microscopic sections of these lymph nodes revealed multiple granulomas: small areas formed by aggregates of epithelioid cells and a few Langhans' giant cells, compatible with sarcoidosis. Caseation necrosis was completely absent and there was no evidence of neoplasia. Extensive laboratory work-up revealed the following: a persistent, mild to moderate anemia; elevated sedimentation rates; intermittent appearance of leukocytosis, unrelated to the recurrent episodes of chills and fever; flat glucose tolerance curve; and low serum carotene level but normal Schilling (absorption of radioactive vitamin B_{12}) test. The fat content of the stools was within normal limits.

Although the clinical findings did not fit the diagnosis of sarcoidosis, because of the biopsy report, a therapeutic

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trial with steroids was instituted in July and August without any improvement except for disappearance of chills. The possible existence of hyperplastic tuberculosis of the lymph nodes resulted in treatment with isoniazid (INH) and para-aminosalicylic acid for six weeks. Only a psychologic effect was noted. Recurrent bouts of fever were less pronounced but still apparent. Progressive weight loss continued and some grayish discoloration of the skin was noted. In October 1960 he reported the occurrence of diarrhea since August and, a little later, some nausea and vomiting accompanied by abdominal distress. Examination of his abdomen revealed small, round, palpable masses which suggested the possibility of Hodgkin's disease. An exploratory laparotomy was performed for purposes of diagnosis on November 15, 1960. This showed the presence of enlarged lymph nodes scattered throughout the mesentery, around the aorta, and in the posterior abdominal wall. The spleen was slightly enlarged and felt granular. The liver was not enlarged but was slightly dusky in color and had a granular appearance. Neither the small intestine nor large bowel showed gross change.

The lymph node removed was firm and measured 3 by 5 by 2 cm. in size. On section, its capsule measured 2 mm. in thickness. The cut surface of the node had a spongy character. It was yellow in color, mottled with gray. Microscopic sections of the lymph node showed the presence of vacuoles, granulomatous reaction, and foamy macrophages with PAS-positive material, characteristic of Whipple's disease (figures 1 and 2). A review of the cervical lymph node biopsy specimen previously obtained and special staining of the sections of the original block, however, did not show changes typical of Whipple's disease.

Since he failed to respond to steroid therapy, a course of nitrogen mustard was administered early in December 1960 without the dramatic improvement reported by several investigators.[11,19] Temperature elevations, although less frequent, still occurred; abdominal pain and tenderness persisted and he reached a low in weight of 89 lb. on December 29. Intensive parenteral ACTH therapy was then added to the antibiotic regimen of tetracycline, 250 mg. four times a day, and continued for three weeks in tapered doses followed by a course of methylprednisolone (Depo-Medrol) until February 10, 1961. At this time he was placed on maintenance oral steroid (Medrol) therapy until February 19, 1961. Progressive improvement was noted shortly after initiation of this routine. By the middle of March, fever, abdominal pain, and diarrhea had subsided entirely. His weight increased up to 118 lb. No abdominal mass or tenderness could be detected and his carotene level rose to a normal level of 65 μg. per cent. During a follow-up examination the patient informed us that he had regained his virility after several years of impotency.

In September 1961, several attempts elsewhere at transoral intestinal biopsy were unsuccessful. A recheck in January 1962 found this patient still in remission, feeling well except for the complaint of easy fatigability and maintaining a weight of 130 lb. The only laboratory abnormality was impairment of fat absorption, as measured by the serum turbidity test[23] following a fatty meal. He was discharged on February 16, 1962, approximately eight years after the onset of his illness (figures 3 and

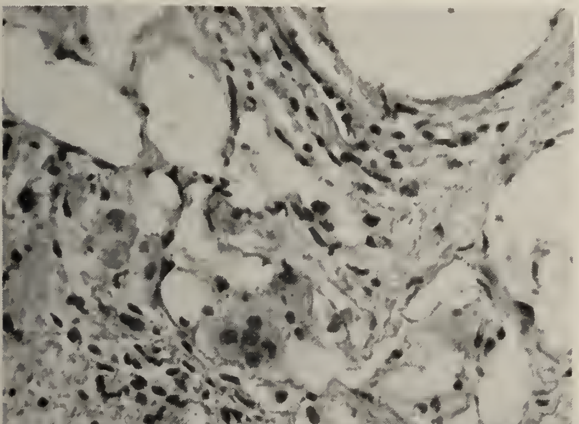


Fig. 1. Microphotograph of section of mesenteric lymph node, showing fat vacuoles, granulomatous reaction, and characteristic, foamy macrophages. Hematoxylin and eosin stain, × 258

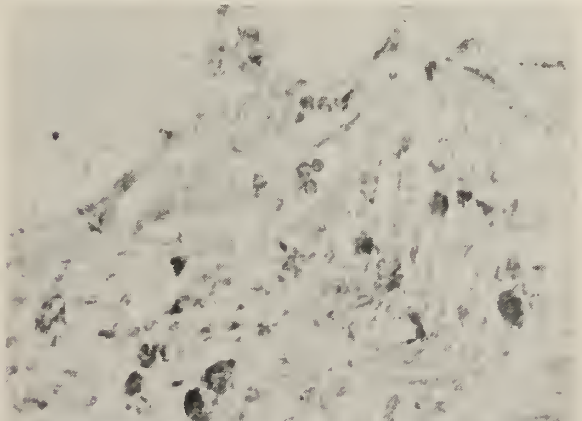
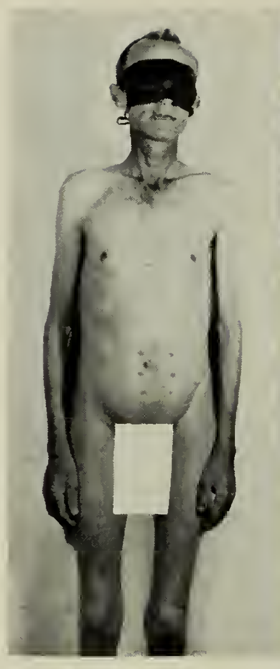


Fig. 2. Microphotograph of section of mesenteric lymph node, illustrating PAS-positive material or inclusion bodies within the macrophages. Periodic acid-Schiff stain, × 258

4). A follow-up examination in June found the patient in good health, with a weight of 132 lb. The serum turbidity test and other routine laboratory tests were normal.



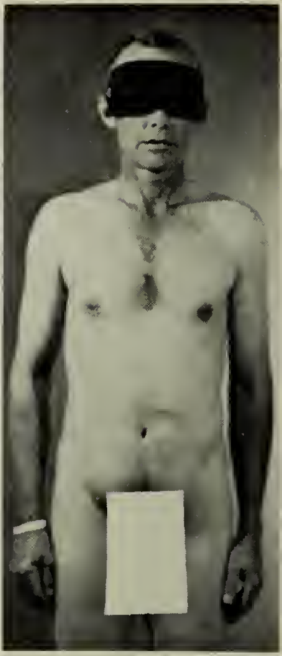


Fig. 3. *(Left)* Appearance of the patient before treatment, November 1960. Fig. 4 *(Right)* The patient one year after treatment, February 1962

DISCUSSION

Whipple's disease is a rare systemic disorder of unknown etiology. It is characterized by its insidious onset with the appearance of any or all of the following physical signs or symptoms: weight loss, arthritis or arthralgia, weakness, and fever which is usually intermittent, periodic, or recurrent and frequently preceded by chills.[2,7,10,11,13,22,24,26] Abdominal pain, tenderness, and distention eventually occur. Diarrhea and a malabsorption syndrome are important, but usually later, manifestations of the disease. Peripheral and abdominal lymph nodes eventually become palpable and skin pigmentation becomes evident. The sedimentation rate is elevated and an anemia that is microcytic and hypochromic in type is seen. As a result of this presenting clinical picture, initial suspicion of diagnoses such as Addison's disease, sprue, collagen disease, hyperplastic tuberculosis, and malignant lymphoma is understandable.[9,11] Furthermore, a peripheral lymph node biopsy may show a sarcoid-like reaction[9,11] and may be misleading or go unrecognized unless a PAS stain is utilized. Sections of peripheral nodes stained by the PAS technic will usually,[12,14] but not always, confirm or establish the diagnosis[11] because of their less intense, positive staining reaction or failure to take the stain or show presence of characteristic cells, as in our case. Sections of mesenteric lymph nodes obtained by laparotomy or sections of adequate tissue of small bowel obtained by transoral intestinal biopsy will almost invariably show PAS-positive, foamy histiocytes or macrophages which are frequently referred to as SPC (sickle-form particles-containing) cells pathognomonic for the disease.[2–5,11,24,25]

Many theories of pathogenesis of this disease have been suggested or reviewed, with the cause remaining unknown. At first the term "intestinal lipodystrophy" was applied to this entity because of the accumulation of fat or lipids in the intestine and mesentery that implicated a disturbance in lipid metabolism or lipid absorption from the intestine.[1] Now it is postulated that Whipple's disease may be due to a chronic allergic hypersensitivity reaction to the formation and accumulation of an abnormal glycoprotein by the reticuloendothelial system,[2] resulting in an absorptive defect,[21] or to a disturbance of lipid digestion in the intestinal epithelium.[27] In addition to the lipogranulomatous reaction within the mesentery, another characteristic histopathologic lesion of Whipple's disease is an unexplained accumulation of material in the macrophages of the mesenchymal tissue within the body, especially in the small intestine and mesenteric lymph nodes. This material now is considered to be a complex substance of carbohydrates, lipids, or lipoprotein.[2,27] It frequently assumes unique sickle-shaped forms within the foamy macrophages that take a PAS stain, now referred to as PAS-positive SPC cells.[5] In the more recent years, studies by electron microscopy have revealed the presence of gram-positive, encapsulated bacilliform bodies in the intracellular spaces and in the macrophages of the lamina propria of the small intestine. As a result of these findings, it has been proposed that the PAS-positive material in the foamy macrophages characteristic of Whipple's disease is the residue of the mucopolysaccharide capsules of the phagocytized bacteria.[28] This new pathogenetic hypothesis needs verification by further bacteriologic studies.

Up until 1952 an effective treatment had not been found. Most of the patients died after a slow, but progressive, downhill course, despite the occurrence of temporary remissions. When relapses or refractoriness to cortisone therapy began to appear in print, clinicians turned to the use of nitrogen mustard with some success. Our patient failed to respond to antibiotics, steroids, and nitrogen mustard but recovered completely by the combined use of ACTH, steroids, and tetracycline. The initial failure to respond to treatment in this case, we thought, rested on the fact that the orally administered steroid was poorly absorbed. However, that the failure of oral cortisone was not the result of impaired absorption, even though malabsorption was one of the features of this condition, has been demonstrated elsewhere.[29] The responsiveness to ACTH in patients with Whipple's disease, some of whom were refractory to cortisone, has been documented in the literature. Except for the resemblance of this condition to collagen disease or neoplastic lymphomas, the beneficial response to ACTH therapy remains unexplained. It might be due to the elaboration of steroids other than cortisone in the adrenal cortex.[22,29] As in this case, the most impressive reports were those in which ACTH was administered in conjunction with an antibiotic.[17,28,29] This would lend support to the theory that Whipple's disease may be of bacterial origin which produces an abnormal reaction throughout the reticuloendothelial system.

SUMMARY

In the presence of a wasting disease with arthralgia, weight loss, weakness, diarrhea or steatorrhea, abdominal pain, lymphadenopathy, pigmentation, and recurrent fever, the diagnosis of Whipple's disease, although rare, is being suspected oftener; confirmation is made by peripheral lymph node biopsy, exploratory laparotomy, or intestinal tube biopsy.

A diagnostic problem of six years' duration is reported. Exploratory laparotomy and mesenteric lymph node biopsy confirmed the diagnosis. From our experience and that derived from the literature, combined therapy with ACTH, steroids, and antibiotics appears to be the treatment of choice.

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Genitourinary Injuries

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THE PURPOSE of this article is to explain the symptoms, diagnostic procedures, and treatment of injuries to the genitourinary organs. Trauma to the kidneys, ureter, bladder, urethra, penis, scrotum, and scrotal contents is discussed and illustrated.

INJURIES OF THE KIDNEY

Injuries of the kidney may be classified according to the type of injury: contusion, subcapsular rupture, laceration through the capsule, and laceration of the renal pedicle. The trauma of laceration may be either penetrating or nonpenetrating. The type of treatment depends largely on the nature of the injury. For example, contusions and subcapsular ruptures of the kidney are usually treated nonsurgically, whereas lacerations are usually treated by operation. Surgical treatment is necessary in penetrating renal injuries, but most nonpenetrating injuries are treated conservatively.

A diseased kidney is more vulnerable to rupture than a healthy kidney. Injuries of the kidney occur more frequently in contact sports, particularly football and boxing, and not infrequently in automobile accidents. These wounds are usually nonpenetrating. Penetrating wounds are more common in war but are also seen in the emergency rooms of large city hospitals.

A contusion of the kidney (figure 1a) is a relatively mild injury and implies a bruise or small hematoma of the renal parenchyma without gross evidence of laceration or perforation.

Subcapsular rupture (figure 1b) implies one or more lacerations of the kidney parenchyma without a break in continuity of the renal capsule. The laceration may extend into the collecting system but by definition does not extend through the capsule. Therefore, in this particular injury, there can be no extravasation of blood or urine into the perirenal tissues. Arterial hypertension, due to compression of the renal parenchyma by a subcapsular hematoma, has been reported in the literature. The mechanism of the hypertension in this instance is similar to that reported by Page in 1939. In Page's classical experiments, arterial hypertension was produced in dogs by wrapping, and thereby constricting, one of the dog's kidneys with cellophane.

Lacerations of the kidney extending through the capsule (figure 1c) may be produced by penetrating or nonpenetrating forces. This type of injury causes a perirenal hematoma. If the laceration extends into the renal pelvis or calyces, extravasation of urine into the perirenal tissues occurs. The force of injury produces either a single tear or multiple lacerations and occasionally is so severe that extensive fragmentation of the kidney occurs. Consequently, many or all of the fragments become devitalized, causing pulpefaction of the kidney.

Laceration of the renal pedicle (figure 1d) is a serious injury and often causes immediate death due to exsanguination. An extensive perirenal hematoma is often found, either at surgery or autopsy. A perirenal hematoma from any cause may become liquefied and encysted, forming a perinephric cyst. If a branch of the main renal artery is transected, infarction of a segment of the kidney may occur and produce renal hypertension.

In any of the above injuries, certain complications may ensue during the following year. Since injured renal tissue is more susceptible to infection, pyelonephritis may be superimposed on the traumatized kidney. The injured kidney may undergo atrophy, and a partially infarcted kidney or subcapsular renal hematoma may produce renal hypertension. Urine and blood which

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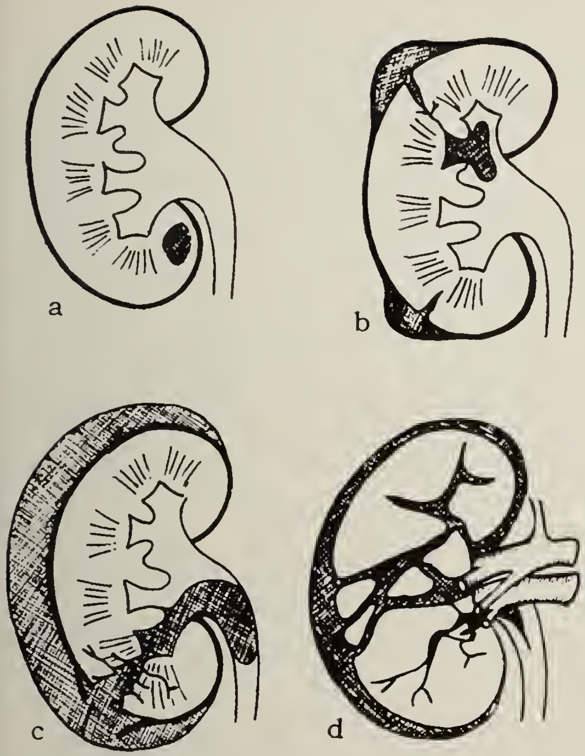

Fig. 1. *a* Contusion of the kidney. *b* Subcapsular rupture of the kidney. Diagram shows a tear extending into one of the calyces, resulting in hematuria. There is no extravasation of urine or blood outside of the renal capsule. c Laceration of the kidney extending through the capsule. The laceration extends into one of the calyces, resulting in hematuria. There is extravasation of urine and blood into the perirenal tissues. *d* Laceration of the renal pedicle and pelvis. Extensive comminution of the renal parenchyma.

have extravasated into the perirenal tissues may become secondarily infected, causing a perinephric abscess.

Signs and symptoms. Pain, tenderness, and guarding over the involved kidney are common findings. Signs and symptoms of peritonitis may be present if the injury extends into the peritoneal cavity. A palpable mass in the flank is less common and, if present, usually indicates a large retroperitoneal hematoma or abscess. Ecchymosis of the skin in the flank regions is sometimes observed in retroperitoneal hemorrhage (Turner's sign). Hematuria is also a common sign. It is estimated, however, that 20 per cent of patients with renal injury do not have gross or microscopic hematuria. Furthermore, the degree of hematuria does not always correlate closely with severity of the trauma. Hemorrhagic shock is unusual in injuries of the kidney. When shock is present it usually signifies laceration of the renal pedicle or associated injuries outside of the genitourinary tract.

Diagnosis. Injuries of the kidney are seldom a surgical emergency. Therefore, the surgeon usually has time to evaluate carefully the extent of the injury. Other damage may take precedence over the renal injury. The diagnosis depends largely on the history, physical findings, and urinalysis. An excretory urogram should be obtained in all cases. Hypotension, if present, must be corrected before an excretory urogram is attempted, however, or the contrast medium will probably not appear in sufficient concentration for adequate visualization. It is imperative that the presence and functional status of the opposite kidney be known before exploration. Also, information may be obtained concerning the injured kidney and contiguous structures; for example, fractures, obliteration of the renal outline and psoas shadow, filling defect in the renal pelvis due to blood clots, extravasation of the contrast medium outside of the kidney, and distortion of the pelviocalyceal system. The excretory urogram may appear normal in the presence of parenchymal laceration or there may be nonfunctioning in the presence of a relatively minor renal injury. If the injured kidney cannot be visualized on the excretory urogram, the author prefers to perform a retrograde pyelogram, instilling 3 to 5 ml. of a contrast medium containing 1 per cent neomycin into the renal pelvis by gravity rather than by injection.

Treatment. Once a renal injury is diagnosed, every effort should be made to determine the extent of the kidney damage. The type of treatment will depend primarily on whether the injury is penetrating or nonpenetrating.

After analyzing 100 cases of penetrating renal trauma due to gunshot and stab wounds, one investigator found that intraperitoneal structures were injured in 80 per cent of the cases. Furthermore, the incidence of complications following nonoperative treatment of penetrating renal injuries is 3 to 4 times higher than the incidence following operative treatment. Most surgeons feel that all patients with a penetrating renal injury should be explored transperitoneally to rule out, or repair, any injury of the intraperitoneal structures. The appropriate operative procedure is then performed transabdominally on the injured kidney.

In the treatment of nonpenetrating renal injuries there are two schools of thought. One group is conservative and feels that operative intervention is rarely necessary. Even then, surgery is performed only when dire circumstances prevail. The other group is diametrically opposed and advocates prompt surgical exploration in the majority of cases.

The author favors conservative management if, on admission, the patient shows no evidence of hemorrhagic shock and if, during the first forty-eight hours, the vital signs remain stable, the hematocrit remains unchanged, there is no evidence of a flank mass or no increase in flank pain, tenderness, or guarding, and there is no evidence on excretory urogram of urinary extravasation outside the kidney. The patient should be given supportive care and placed on strict bed rest for a minimum of one week following cessation of the gross hematuria. He should also be followed with periodic urinalyses and a repeat excretory urogram for at least one year post injury to ascertain that complications, such as pyelonephritis, renal atrophy, or arterial hypertension, do not appear.

If, on admission, the patient shows evidence of associated intra-abdominal injury, hemorrhagic shock, or a flank mass or if there is evidence of continuous retroperitoneal bleeding or urinary extravasation, appropriate preoperative treatment is administered and the kidney explored through a flank incision. A transperitoneal approach is used in penetrating renal injuries. It is imperative that the presence and functional status of the opposite kidney be known before exploration. The kidney is exposed, and the laceration in the parenchyma of the kidney is closed with mattress or, preferably, interrupted chromic sutures. Hemostatic materials such as oxidized cellulose (Oxycel) and absorbable gelatin sponge (Gelfoam) are occasionally necessary to arrest the bleeding. If the kidney is badly damaged, partial or complete nephrectomy may be necessary, provided that the opposite kidney can sustain life. A Penrose drain is placed into the perinephric space, and the incision is closed in layers. If a perinephric abscess is present, culture and sensitivity studies of the pus are done. Postoperatively, the patient should be placed on penicillin and streptomycin until the cultures have been reported. If all or part of the injured kidney remains, the patient should be observed for at least one year postoperatively for the appearance of any of the complications listed above.

INJURIES OF THE URETER

Injuries of the ureter may be divided into surgical and nonsurgical categories. Surgical injuries of the ureter may be produced externally or from within the ureter. Nonsurgical trauma may be divided into penetrating or nonpenetrating injuries.

Operative injuries of the ureter are more common than nonoperative injuries. Because of their proximity to the pelvic organs, the lower ureters are especially vulnerable to operative injury. The incidence of ureteral injury during pelvic surgery is about 3 per cent. One or both ureters may be ligated, partially or completely transected, or crushed. Internally produced surgical injuries occur most often during cystoscopic manipulation of ureteral calculi.

Because of its deep location, mobility, and small size, a nonsurgical injury of the ureter is less common than other genitourinary injuries. Nonsurgical trauma of the ureter is more frequent in time of war. The injuries are usually penetrating and, most commonly, caused by gunshot and knife wounds. Closed rupture or avulsion of the ureter is rare.

Signs and symptoms. If both ureters are transected or ligated the patient will become anuric and, eventually, uremic. If one ureter is transected or ligated the patient will not become anuric unless the opposite kidney is missing, blocked, or badly diseased. If one ureter is completely ligated, the involved kidney is uninfected, and there is no urinary extravasation, the patient may exhibit mild symptoms or even be asymptomatic. If the ureter is partially ligated or the kidney is infected or there is urinary extravasation, the patient may develop fever, chills, flank pain, and tenderness. Septicemia is a grave complication of ureteral injuries. Urinary extravasation may lead to a retroperitoneal or intraperitoneal abscess. In a few days, depending on the type of injury, a ureterovaginal or ureterocutaneous fistula may appear. A patient with ureterosigmoid and ureterocutaneous fistulas following a bullet wound of the lower abdomen was recently treated by the author. If a ureteral stricture ultimately develops, the patient may exhibit signs and symptoms of a hydronephrosis or recurrent pyelonephritis.

Diagnosis. One-third of operative ureteral injuries are recognized during surgery, one-third during the first postoperative week, and the remainder in the late postoperative period.

If ureteral trauma is suspected during surgery, the opening in the proximal segment of ureter may be located by the appearance of blue dye following the intravenous injection of indigo carmine. The site of ligation or the opening in the distal ureteral segment may be found by the cystoscopic passage of a large ureteral catheter while the surgeon attempts to locate the tip of the catheter through the abdominal incision.

Immediately following pelvic surgery or surgery in the vicinity of the abdominal ureters, flank pain and tenderness, unexplained fever and

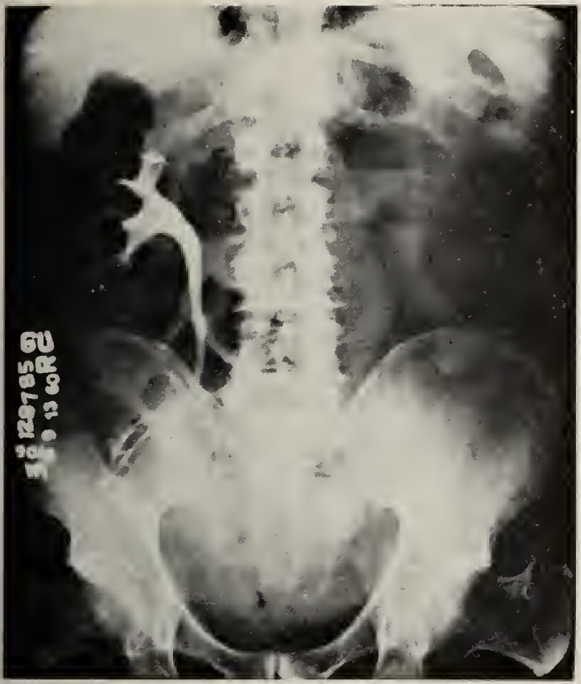

Fig. 2. Retrograde pyelogram demonstrating a ureterocutaneous fistula which followed surgical trauma of the right ureter

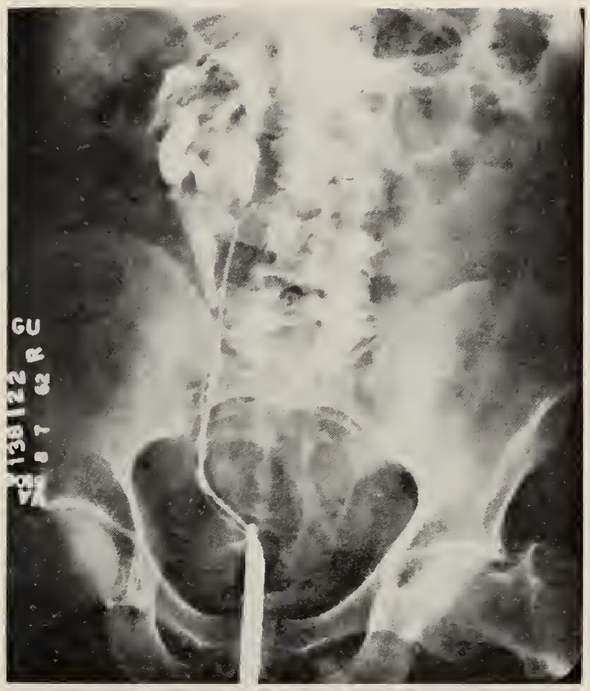

Fig. 3. Periureteral extravasation of contrast medium which followed perforation of a right bifid ureter during retrograde catheterization

anuria or oliguria should always alert the surgeon to the possibility of ureteral injury. If the blood urea nitrogen is within normal limits, an excretory urogram should be obtained. This provides information concerning the presence and functional status of the opposite kidney. If the ureter is only partially obstructed, the point of obstruction may be visualized on the excretory urogram. Usually, there is no appearance of contrast medium, and cystoscopy and retrograde catheterization are necessary. Retrograde pyelography should not be attempted unless the catheter can be passed beyond the obstruction. If the patient is azotemic or uremic, retrograde pyelography should be done on only one side. In approximately 90 per cent of the cases, the ureteral catheter cannot be passed beyond the site of injury. Nevertheless, the level of obstruction is determined from retrograde catheterization. If the ureteral injury is not recognized during the immediate postoperative period, it may never be or it may not become evident until a ureterovaginal or ureterocutaneous fistula appears a few days following surgery. An excretory urogram or retrograde pyelogram at this time may demonstrate the fistula (figure 2).

If a ureteral stricture ultimately forms, the excretory urogram may demonstrate the level or extent of the stricture with varying degrees of proximal pelvioureterectasis. Provided there is no vesicoureteral reflux, a vesicovaginal fistula is differentiated from a ureterovaginal fistula by the blue staining of a vaginal pack following the instillation of indigo-carmine dye into the bladder.

Internally produced operative injuries, which are usually caused by ureteral catheterization or the cystoscopic manipulation of ureteral calculi, may not be recognized at the time of cystoscopy unless retrograde pyelograms are made (figure 3). If extravasation of infected urine occurs, the patient often has fever, chills, and flank tenderness postoperatively. In a few days a retroperitoneal abscess may be clinically evident.

The incidence of associated intra-abdominal trauma in nonsurgical penetrating injuries of the ureter is approximately 90 per cent. During surgery for penetrating abdominal injury, associated ureteral trauma is recognized in only one-third of the cases. Both penetrating and nonpenetrating injuries of the ureter are diagnosed in the same manner as operative injuries.

Treatment. The treatment of ureteral injuries depends largely on whether the diagnosis is made during surgery or postoperatively.

The most favorable time for repair of ureteral injury is immediately, that is, while the abdomen is open. Permanent damage to the kidney begins

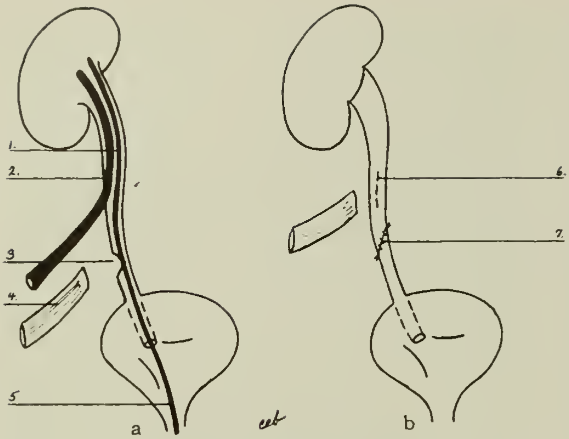

Fig. 4. *a* A method of treating ureteral injury. (1) Ureteral catheter serving as splint. (2) Tube ureterostomy for proximal urinary diversion. (3) Defect in ureteral wall caused by injury. (4) Penrose drain. (5) Ureteral catheter brought out through urethra and taped either to penis or urethral catheter. *b* A method of rejoining a transected ureter. (6) Proximal diverting ureterotomy. The ureterotomy serves as a safety valve. When urine flows freely through the anastomosis, the ureterotomy spontaneously closes. (7) Elliptic end-to-end anastomosis of ureter

at the moment of ureteral ligation. If the ureteral ligature is found, the ureter should be deligated immediately. A splinting ureteral catheter is not necessary. A ureteral stricture may develop in a few weeks following deligation but fistula formation is unusual. Crushing injuries of the ureter invariably cause pressure necrosis of a portion of the ureteral wall, leading to fistula formation. This type of injury should be treated by resection of the crushed portion of the ureter and end-to-end anastomosis. Partial transections of the ureter should not be sutured but treated by a ureteral catheter for splinting and tube ureterostomy for diversion and extraperitoneal drainage (figure 4a). Complete ureteral transection should be treated by end-to-end anastomosis. The ends of the ureter are spatulated and anastomosed, using interrupted fine chromic catgut sutures. A water-tight anastomosis is not attempted. A proximal diverting ureterotomy is done and the extraperitoneal space drained (figure 4b). If the anastomosis appears precarious, the ureteral segments should be joined (as shown in figure 4a). If the ureter is injured close to the bladder, ureteroneocystostomy is the procedure of choice. If the ureter is too short to reach the bladder, the gap may be bridged with a Boari bladder flap (figure 5a) or an isolated segment of small intestine (figure 5b). If the patient's general condition is poor when the injury is discovered, the operation should be terminated, a tube ureterostomy performed, and definitive repair done at a later date.

When the ureteral injury is discovered in the postoperative period, treatment depends largely on the circumstances. If both ureters are injured and the patient anuric, immediate cystoscopic catheterization of the ureters should be attempted. If one or both catheters pass the obstruction, they are left in to drain the kidneys until the patient's general condition improves. If a catheter cannot be passed beyond the obstruction, an immediate tube ureterostomy or nephrostomy should be done on one side. When the patient's general condition improves, a tube ureterostomy or nephrostomy should be performed on the opposite side and definitive treatment of the ureteral injuries carried out later. If a single ureter is injured, retrograde catheterization should be attempted first. The completely obstructed, uninfected kidney will regain a large percentage of its original function if the obstruction is relieved within two to four weeks. The optimum time to attempt definitive repair of a single ureteral injury is within two to four weeks following the injury but after the patient recovers sufficiently from his original surgery to withstand a second major operation. Again, the definitive treatment depends largely on the circumstances. The operation of choice may be end-to-end ureteral anastomosis, transureteroureterostomy, Boari bladder flap, ureteroneocystostomy, ureteroileocystostomy, or nephrectomy.

Perforation of the ureter, occurring during

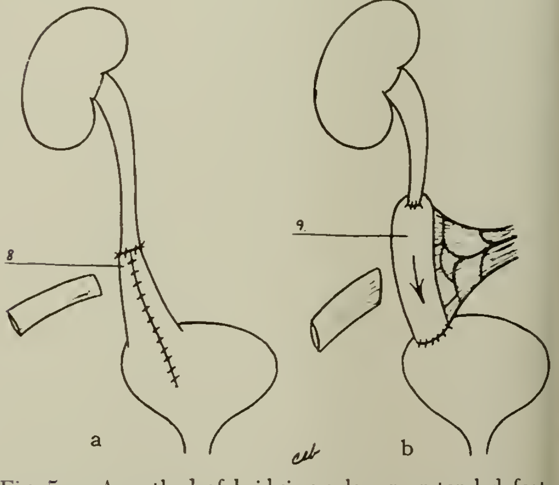

Fig. 5. *a* A method of bridging a lower ureteral defect. (8) Boari bladder flap. The ureter is anastomosed to a tube constructed from a full-thickness flap of the bladder wall. *b* A method of bridging a lower ureteral defect. (9) Isoperistaltic segment of ileum interposed between ureter and bladder (ureteroileocystostomy)

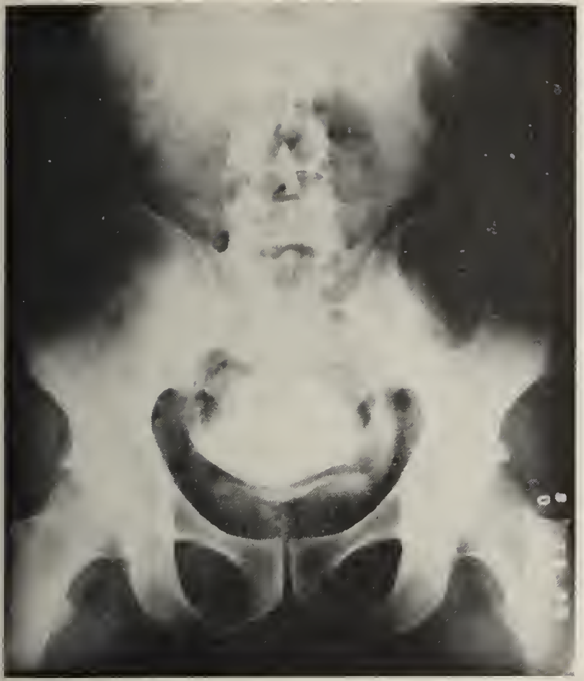

Fig. 6. Retrograde cystogram demonstrating an intraperitoneal rupture of the urinary bladder

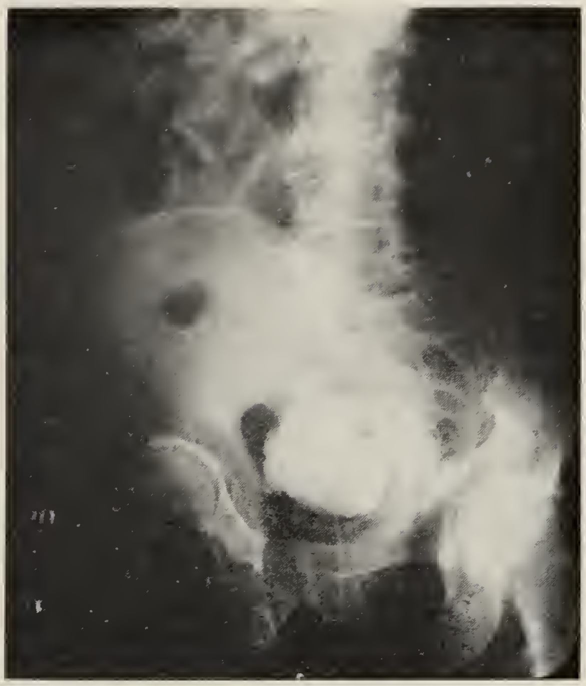

Fig. 7. Retrograde cystogram demonstrating an extraperitoneal rupture of the urinary bladder

ureteral catheterization or manipulation of a ureteral calculus, is usually treated conservatively. A urine specimen for culture and sensitivity should be obtained and the patient started on a broad-spectrum antibiotic. He is kept in the hospital and observed for a secondary infection of the extravasated urine or the development of a retroperitoneal abscess.

Nonoperative injuries of the ureter are treated in the same manner as operative injuries.

Because of the possibility of anomalies of the ureters and kidneys, a preoperative excretory urogram should be obtained whenever extensive abdominal and pelvic operations are contemplated. Also, the preoperative insertion of ureteral catheters may help the surgeon to identify the ureters during the course of the dissection.

INJURIES OF THE BLADDER

Injuries of the bladder may be classified according to the type of injury: intra- or extraperitoneal perforation or laceration, contusion, or a combination of these types. The lacerations may be penetrating or nonpenetrating. Penetrating injuries may be produced externally or internally.

Penetrating intra- and extraperitoneal injuries of the bladder are more common in war, although impalement of the bladder by various foreign objects is occasionally seen in civilian practice. Bone spicules in fractures of the pelvis may also perforate the bladder. Penetrating injuries produced internally are usually iatrogenic and occur during instrumentation of the bladder.

Nonpenetrating bladder injuries are more frequent in civilian practice. Intraperitoneal rupture of the bladder usually occurs when a forceful blow is delivered to the suprapubic region in the presence of a partially or fully distended viscus. The bladder usually ruptures through the posterior wall or fundus. Infrequently, the distended bladder ruptures extraperitoneally. Extraperitoneal ruptures are usually through the anterior wall of the bladder just above the vesical neck. Nonpenetrating extraperitoneal lacerations of the bladder occur more frequently in fractures of the bony pelvis. Sudden and forceful displacement of the pelvic fragments may produce violent stress on the moorings of the bladder, thereby lacerating the organ. The incidence of extra- and intraperitoneal perforation and laceration of the bladder associated with fractures of the pelvis is approximately 10 per cent.

Contusion of the bladder implies a bruise or injury of the bladder wall without perforation into the perivesical tissues or peritoneal cavity. Any combination of the afore-mentioned injuries can occur and is usually associated with severe pelvic injury.

Symptoms. Most patients experience severe lower abdominal pain with rupture of the bladder. Signs and symptoms of peritonitis ensue within twelve to twenty-four hours following intraperitoneal laceration or perforation of the bladder. Even sterile urine may produce peritonitis. Extraperitoneal laceration or perforation results in extravasation of urine into the perivesical tissues, causing suprapubic induration, tenderness, dullness to percussion, and sepsis. Signs of hemorrhagic shock are unusual in injuries of the bladder unless there is associated trauma capable of producing shock. Laceration of a large pelvic artery may produce a retroperitoneal hematoma and hemorrhagic shock. Most patients have hematuria following rupture of the bladder. They usually have a strong urge to urinate but, instead, painfully void only a small quantity of bloody urine.

Diagnosis. A diseased bladder is more vulnerable to rupture than a healthy organ. Therefore, the possibility of associated genitourinary disease should be considered. Also, trauma to other organ systems should be evaluated.

When the diagnosis of a lacerated or perforated bladder is suspected, a retrograde cystogram should be performed. This is done by catheterizing the patient and instilling about 4 oz. of a sterile radiopaque medium into the bladder. (The author prefers 10 per cent Skiodan.) Following instillation of the contrast medium, the catheter is clamped and a kidney, ureter, and bladder roentgenogram is made, both in the anteroposterior and oblique positions. The contrast medium is completely drained through the catheter, and the same roentgenograms are repeated. This is done to detect any contrast medium which may have extravasated but was obscured by the radiopaque fluid within the bladder. Intraperitoneal rupture of the bladder (figure 6) shows very little contrast medium within the bladder. The dye gravitates into the dependent portions of the peritoneal cavity and shows a scalloped, or "sun-burst," effect produced by loops of intestine. Extraperitoneal rupture (figure 7) shows a diffuse, more circumscribed shadow due to infiltration of the contrast medium throughout the perivesical space. If the patient is not hypotensive or in critical condition, the author prefers to obtain an excretory urogram at the same time to determine the status of the upper urinary tracts.

Another common diagnostic method is the instillation of a measured volume of sterile water or saline into the bladder following catheterization, then measurement of the volume recovered through the same catheter. If the bladder is lacerated or perforated, a certain proportion or all of the instilled fluid extravasates, and less fluid than instilled is aspirated from the bladder. The author, however, has found this method unreliable.

Treatment. When an extra- or intraperitoneal laceration or perforation of the bladder is diagnosed, the treatment is immediate surgery. Following administration of the anesthetic agent, a suprapubic incision is made and the prevesical space (of Retzius) is entered. This should be done to rule out extraperitoneal extravasation. Then, the bladder is opened and explored to either rule out or locate an intraperitoneal laceration. If an intraperitoneal laceration is found, the peritoneum is opened and as much urine as possible is suctioned from the peritoneal cavity. The laceration in the bladder wall is approximated in 2 layers with chromic sutures, and the peritoneum is closed without drainage, unless an abscess cavity is found. A large catheter is brought out suprapubically through the cystotomy incision, which is also approximated with chromic sutures. A Penrose drain is placed in the prevesical space and the abdominal wall is closed in layers. If possible, an extraperitoneal laceration should also be sutured, but, in any case, a suprapubic cystostomy should be performed and the prevesical space drained. At the time of surgery it is advisable to obtain urine from both the bladder and the peritoneal cavity or perivesical space for culture and sensitivity studies. Postoperatively the patient should be placed on penicillin and streptomycin, at least until the urine cultures are reported. The Penrose drains are usually removed on the fifth and the suprapubic tube on the tenth postoperative days. Following removal of the suprapubic tube a urethral catheter is inserted for two or three days, until the suprapubic tract closes spontaneously.

A contusion of the bladder generally requires no specific treatment. Areas of devitalization in the bladder wall can slough, leading to urinary extravasation.

INJURIES OF THE MALE URETHRA

Injuries of the male urethra may be classified as trauma localized in the anterior or posterior urethra. The anterior urethra is divided into pendulous and bulbous segments; the posterior urethra includes membranous and prostatic portions. Urethral trauma may also be classified, according to the force of injury, as either penetrating or nonpenetrating. Penetrating injuries are produced externally or from within the urethra; nonpenetrating injuries may be either contusion or rupture—partial or complete.

Certain fascial compartments direct and limit the spread of extravasated urine (figure 8). The direction in which urine extravasates following injury of the male urethra depends on whether the anterior or posterior urethra is ruptured. Following rupture of the bulbous portion of the anterior urethra, the urine may extravasate through the superficial perineal compartment, spreading beneath Colles' and the dartos fasciae into the loose areolar tissues of the penis and scrotum. The extravasated urine is limited to the anterior perineum because of the fusion of Colles' fascia to the posterior margin of the urogenital diaphragm. Extravasation into the thighs is prevented by the attachment of Colles' fascia to the fascia lata, but urine may spread upward beneath Scarpa's fascia over the pubis and lower abdomen and, occasionally, as high as the clavicles. Rupture of the membranous urethra leads to urinary extravasation either within the deep perineal compartment or between the puboprostatic ligaments into the prevesical space (of Retzius). The membranous urethra may be completely severed at the apex of the prostate, resulting in a pelvic hematoma and cephalad displacement of the prostate and bladder. Extravasation within the urogenital diaphragm may spread caudad into the perineum or cephalad into the perivesical tissues.

Externally produced penetrating injuries of the urethra due to metallic fragments and knife and gunshot wounds are more common in war. In civilian practice, lacerations of the urethra are usually caused by bone fragments in fractures of the pelvis. Injuries produced from within the urethra are usually iatrogenic and most often result from careless urethral instrumentation. However, a large percentage of internally produced injuries are self-inflicted as a form of masturbation or self-punishment. A wide variety of foreign bodies used for this purpose have been recovered from the urethra and bladder. Spontaneous rupture of the urethra through a thin, weakened portion of the urethral wall proximal to a stricture is not infrequent.

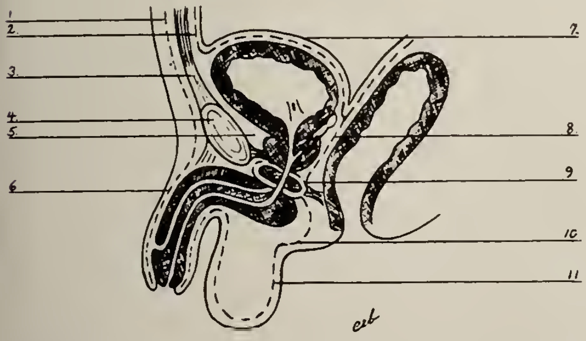

Fig. 8. Sagittal view of the male pelvis. The diagram demonstrates some of the important fasciae and fascial compartments of the male pelvis and perineum. They include: (1) Scarpa's fascia, (2) prevesical fascia, (3) rectus muscle, (4) symphysis pubis, (5) prevesical space (of Retzius), (6) dartos fascia (in penis), (7) peritoneum, (8) apposed anterior and posterior layers of Denonvilliers' fascia, (9) posterior margin of urogenital diaphragm, (10) Colles' fascia, and (11) dartos fascia (in scrotum).

Nonpenetrating trauma usually results from a saddle type of fall, which injures the bulbous more often than the pendulous urethra. The blow to the perineum from falling astride a hard object crushes the urethra against the symphysis pubis. The membranous urethra may be torn by displacement of bone fragments in fractures of the pubic arch. Nonpenetrating injuries may cause a contusion, or they may bring about a partial or complete rupture of the urethra. Stricture formation almost invariably follows any injury of the urethra.

Signs and symptoms. The patient usually has few or no symptoms following contusion of the urethra. Contusion may cause slight urethral bleeding or only initial microscopic hematuria. Following partial rupture or laceration of the urethra, the patient may have severe urethral bleeding and extreme difficulty in voiding. He usually experiences suprapubic pain with injuries of the posterior urethra or perineal pain with trauma of the anterior urethra. Because of local pain and spasm of the external urethral sphincter, the patient usually makes no immediate attempt to void. The patient may go into complete urinary retention or, if he subsequently voids, is likely to extravasate urine into the perineal or perivesical tissues, depending on the location of the injury. If the urethra is completely transected, the patient will be entirely unable to void externally and will often present with a markedly overdistended bladder. If the prostate or membranous urethra above the urogenital diaphragm is completely transected, a mixture of hematoma and urine may cause cephalad displacement of the bladder and prostate.

Urinary extravasation is a serious sequel, whether the urethra is partially or completely transected. When extravasation results from rupture of the perineal portion of the urethra the anterior perineum becomes bulging, tense, and tender. As the urine infiltrates into the scrotum and penis, a combination of infiltrating urine and inflammatory exudate will cause the penis to become swollen. The penile and scrotal skin become thickened, indurated, and shiny. The urine may extravasate upward along the abdominal and chest walls. If the urine is infected, a phlegmonous process occurs and the patient

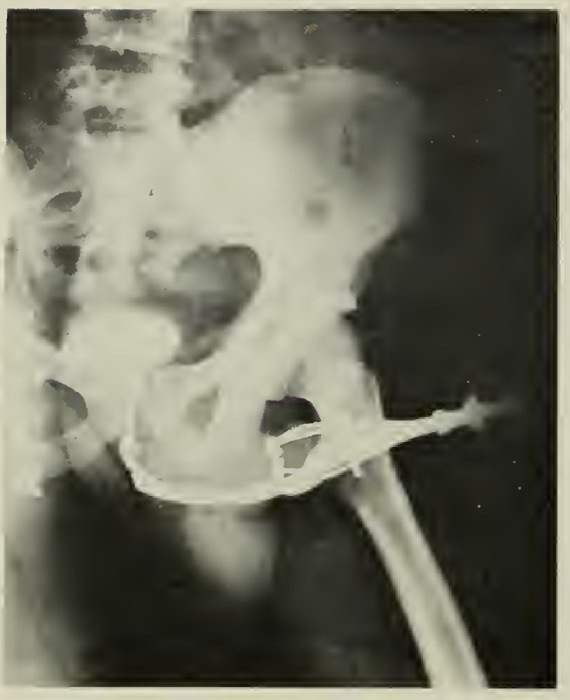

Fig. 9. Retrograde urethrogram demonstrating 2 mild strictures in the anterior urethra following a history of nonpenetrating urethral trauma

becomes extremely toxic. In a few days, if the patient survives, localized abscesses may be evident in the penis, scrotum, or abdominal wall. The author recently treated a diabetic patient with spontaneous rupture of the anterior urethra and urinary extravasation as high as the clavicles, secondary to a severe anterior urethral stricture. The phlegmonous extravasation was infected with a gas-forming bacillus, causing an extensive subcutaneous emphysema.

Stricture formation of varying degrees at the site of urethral injury is almost inevitable. Fistula formation, most common in the anterior urethra, may occur. A urethral diverticulum may develop and is a late complication.

Diagnosis. When the history and physical findings suggest an injury of the urethra an attempt should be made to catheterize the patient with a 16 F. soft rubber catheter. If the urethra is ruptured or lacerated, an obstruction is usually encountered at the site of the injury, and urethral bleeding is aggravated when attempting to catheterize the patient. The author feels that retrograde urethrography is not necessary to make a diagnosis or to locate the urethral injury. However, retrograde urethrogaphy is valuable in demonstrating the number and extent of posttraumatic strictures (figure 9).

Treatment. Contusion of the urethra is treated conservatively. When a rupture or laceration of the urethra is diagnosed, urethral continuity should be restored or the urinary stream diverted proximal to the injury. Areas of urinary extravasation, if present, should be incised and drained.

Urethral continuity is restored by means of a splinting catheter. If a 16 F. soft rubber catheter can be passed through both segments of the injured urethra, it should be taped to the penis and left in place. If this type of catheter cannot be passed beyond the rupture, an attempt should be made to catheterize the patient with a Foley catheter on a mandrin (stylet). If the attempt is successful, clear urine will flow through the catheter following removal of the stylet. When all attempts at urethral catheterization are unsuccessful, temporary diversion of the urinary stream by suprapubic cystostomy or perineal urethrostomy may be necessary. Any attempt to reanastomose the torn ends of the pendulous urethra following closed rupture may result in the formation of a urethrocutaneous fistula. Following open laceration of the pendulous urethra, the urethral ends should be approximated with interrupted fine chromic sutures and proximal urinary diversion performed. Following perineal injuries, the ends of the bulbous urethra are usually extremely difficult to locate in the traumatized perineal tissues. Therefore, primary reanastomosis of the ruptured bulbous urethra should not be attempted.

If a splinting catheter cannot be passed through an injury of the pendulous urethra, a perineal urethrotomy is performed provided there is no periurethral urinary extravasation or abscess. An attempt should be made through the perineal urethrotomy to guide a catheter or sound into the proximal segment of the injured urethra. If this attempt is not successful, a catheter should be left in place through the perineal urethrostomy, and definitive repair of the urethral injury should be done at a later date. If a splinting catheter cannot be passed through an injury of the bulbous or posterior segments of the urethra, a suprapubic cystotomy is performed. With an index finger inserted through the vesical neck into the posterior urethra, a urethral sound or catheter on a stylet can often be guided into the bladder. Also, it is possible to introduce a Foley catheter, as depicted in figure 10a, b, c, and d. In figure 10a, a sound is passed in an antegrade direction through the posterior urethra, while another sound is passed in a retrograde direction through the anterior urethra. When direct contact is made between the 2 sounds, the posterior sound is withdrawn as the anterior sound is advanced into the bladder.

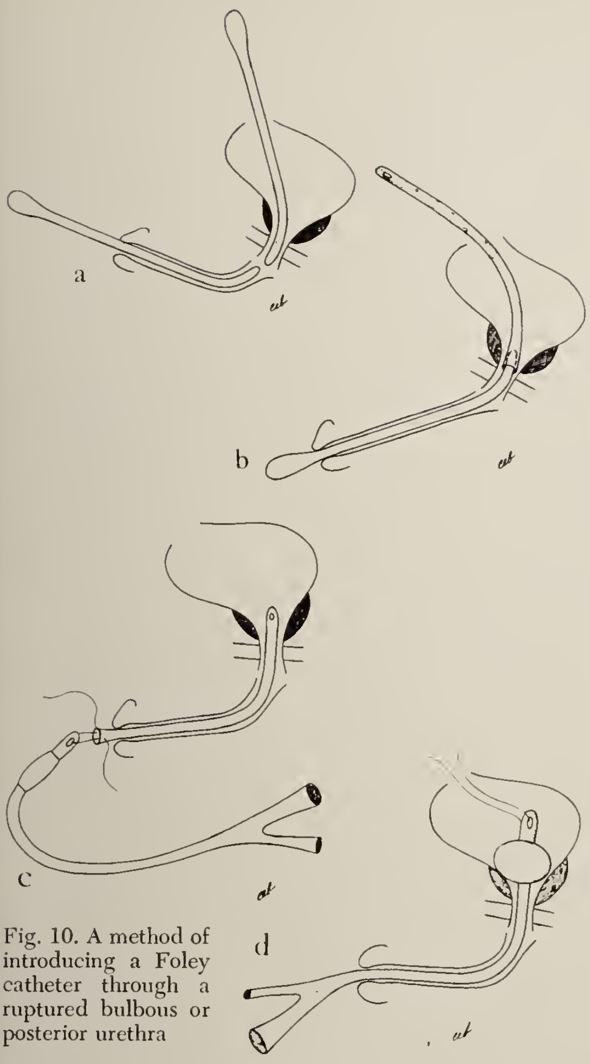

Fig. 10. A method of introducing a Foley catheter through a ruptured bulbous or posterior urethra

Interlocking sounds may be used instead of Van Buren sounds. In figure 10b, the end of a Robinson catheter is tightly fitted over the beak of the sound. The sound is withdrawn as the catheter is pushed in an antegrade direction through the urethra. In figure 10c, the tip of a Foley catheter is sutured to the end of the Robinson catheter. The Robinson catheter is then pulled in a retrograde direction back through the urethra, guiding the Foley catheter into the bladder. Figure 10d shows the splinting Foley catheter in place and the bag inflated. A heavy silk suture is passed through the eye of the Foley catheter and the ends are brought out through the cystotomy and suprapubic incisions. This is done in order to facilitate the reintroduction of the urethral catheter if it is accidentally removed or requires changing. Usually, the bladder is closed primarily with chromic sutures. If the patient is in critical condition or a splinting catheter cannot be passed into the bladder, only the urinary diversion should be done and restoration of urethral continuity attempted at a later date. The splinting catheter should be left in place for two or three weeks.

The presence of urinary extravasation creates even more of a surgical emergency. Because of the patient's usually seriously ill condition, protracted attempts at urethral catheterization should be abandoned and immediate suprapubic cystotomy performed. If the patient's condition will permit, restoration of urethral continuity should be attempted. If a splinting catheter cannot be passed into the bladder, a suprapubic tube is inserted, the bladder closed, and restoration of urethral continuity attempted at a later date. Multiple incisions through the skin and superficial fascia with through-and-through drainage are made throughout the phlegmonous areas. Culture and sensitivity studies of the exudate should be started immediately, and the patient placed on penicillin and streptomycin until the cultures are reported. These patients are frequently toxic and often require massive doses of antibiotics to control the infection.

If the urethra is not kept dilated following the injury a severe post-traumatic stricture may ensue. The urethra should be calibrated about two weeks following removal of the splinting catheter and then dilated periodically to maintain a satisfactory urethral caliber. Filiforms and bougie followers may be necessary to dilate a urethral stricture. Occasionally, an internal urethrotomy or urethroplasty is indicated to treat a severe, rapidly recurring urethral stricture.

INJURIES OF THE FEMALE URETHRA

Penetrating injuries of the female urethra are uncommon and are usually produced by obstetric forceps or by bone fragments in fractures of the pelvis. Also, the urethra may be perforated by various foreign objects passed through the vagina or from within the urethra. A urethrovaginal fistula may result from a penetrating injury of the urethra. Contusions of the urethra occur most often during childbirth and are treated conservatively. Penetrating injuries of the female urethra are repaired either at once or a few weeks after the injured urethral and vaginal tissues have healed. Following repair of the urethral injury, the urine should be diverted temporarily by suprapubic cystostomy.

INJURIES OF THE PENIS

Injuries of the penis are frequently accompanied by injuries of the urethra and the scrotum and scrotal contents. Injuries of the external genitalia often present medicolegal problems, since penile deformity, partial or complete loss of penile substance, impotency, sterility, and infertility may ensue.

Penile injuries may be classified as penetrating or nonpenetrating. Nonpenetrating injuries may be subclassified according to the type of injury: contusion, rupture, dislocation, incarceration, and avulsion.

Penetrating injuries of the penis due to metallic fragments and knife and gunshot wounds are more common in time of war. Lacerations or perforations of the penis occurring in civilian practice are frequently the result of mayhem or are self-inflicted, usually by psychotic individuals. Penile and urethral injuries are occasionally seen as a complication of circumcision.

Nonpenetrating injuries of the penis are more common in civilian practice. Contusions result from a blow to the erect or flaccid penis. Usually, these are minor injuries; however, a traumatic cavernositis may occur, resulting in fibrous induration of one or both cavernous bodies. This in turn may interfere with erectile function distal to the site of injury. Rupture of one or both corpora cavernosa is caused by any nonpenetrating force which produces a tear in the tunica albuginea. The author recently treated a patient who ruptured a corpus cavernosum when he accidentally turned over in bed and rolled forcefully on an erect penis. A dislocation of the penis is a rare, but serious, injury caused by a violent force, which tears the corpora cavernosa and corpus spongiosum from their skin sheath and mucous membrane attachment and displaces them beneath the skin of the scrotum, pubis, or thigh. This type of injury is usually accompanied by complete urinary retention, considerable hemorrhage, and hematoma formation. Incarceration results from constriction of the penile shaft with rings, milk bottles, string, and other foreign objects. Usually, only the skin and dartos layer are damaged but, occasionally, the corpora and urethra are injured as well. If the constriction persists too long, urethral obstruction or gangrene of the penis may occur. Avulsion of the penile and scrotal skin in one piece is a fairly common industrial and farm injury. This type of injury occurs when meshing gears, a mechanical belt, or the turning shaft on a tractor engages a trouser leg and instantaneously twists it off, along with the scrotal and penile skin. In addition to the penile and scrotal skin loss, the skin may be torn back into the perineum and rectum. In a few cases the penis or one or both testicles have also been avulsed.

Signs, symptoms, and diagnosis. The diagnosis of injury of the penis is made primarily by inspection. Urethral injury should be ruled out by the methods described in the previous section. Penetrating wounds usually do not bleed seriously unless one or more of the dorsal blood vessels are severed or the corpora cavernosa are lacerated. The penis should be examined roentgenographically in cases of penetrating injuries to rule out the presence of a foreign body, particularly in the corpora or urethra. Contusion is usually a minor injury but may result in a traumatic cavernositis, characterized by persistent turgescence, tenderness, and pain in one or both corpora. If fibrous induration results, during an erection the penis may remain flaccid distal to the injury. When the corpora are ruptured, the injury is accompanied by a cracking sound, severe pain in the penis, deturgescence, and hematoma. If one corpus is ruptured, the patient may subsequently develop a penile deformity which becomes obvious only during an erection, and if both corpora are ruptured he may subsequently become impotent. Dislocation of the penis usually follows a severe blow to the genital region and results in hemorrhage, a torn urethra, and urinary retention. Because of the hematoma, the displaced penis usually cannot be palpated until the clots are removed. A penis incarcerated by some constricting object eventually becomes swollen and dark, distal to the object. The distal end of the penis may become gangrenous, and the patient may be unable to void because of urethral compression. Avulsion of the scrotal, penile, and perineal skin is diagnosed by inspection. Continuation of the tear into the rectum must be ruled out.

Treatment. In any injury of the penis, the surgeon should endeavor to conserve all viable penile and scrotal tissue, to control hemorrhage, and, subsequently, to prevent penile deformity, impotence, infertility, or sterility. The tissues of the penis and scrotum have a remarkable regenerative power, and what might appear to be hopelessly damaged tissue may ultimately appear viable if allowed to remain. Also, any associated urethral injury should be treated as described in the previous section. If a paraphimosis is present it should be reduced, even if a dorsal slit is necessary.

Penetrating injuries of the penis are treated in the same manner as other soft tissue injuries. An attempt should be made to remove any foreign material from the urethra or corpora cavernosa, since neither structure tolerates foreign bodies. Following any necessary repairs, tetanus toxoid or antitoxin and a prophylactic antibiotic should be administered. If the penis distal to a laceration becomes gangrenous, partial penectomy should be performed. If one or both corpora are transected but the corpus spongiosum and urethra remain intact, the ends of the corpora should be reanastomosed with interrupted chromic sutures. Penile injuries may cause extensive scarring, with a chordee or other similar deformity resulting. All scar tissue should be excised and the denuded portion of the penile shaft covered with a free, split-thickness skin graft ten- to thirteen-thousandths of an inch thick. The suture lines of the skin graft should be staggered and should not encircle the penis or lie over the urethra. Full-thickness skin flaps, rotated to cover the denuded penis, should not be used. When there is extensive loss of penile substance, plastic reconstruction should be considered. In order to preserve some erectile function the bulbous portion of the shaft can be mobilized, advanced, and covered with a split-thickness skin graft. The foreign literature, in particular, contains case reports of total reconstruction of the penis by constructing a skin tube supported by a cartilage transplant. A urethra can be reconstructed through the new phallus.

Contusion is treated by elevation and support of the penis, along with the application of cold compresses, immediately following the injury. Rupture of the penis is usually treated conservatively. However, if hemorrhage continues from the torn corpora, the hematoma should be evacuated and the corpora sutured. With dislocation of the penis, surgery is necessary. The hematoma is evacuated, the penile shaft is located and returned to its skin sheath, and continuity of the urethra is restored. Incarceration of the penis requires immediate removal of the constricting object. If any portion of the penis distal to the site of injury becomes devitalized, plastic repair is delayed until demarcation of the devitalized tissue occurs. Following industrial and farm accidents in which the penile and scrotal skin are avulsed, immediate surgery is mandatory. The avulsed skin should not be used to recover the denuded penis or testicles. First, any lacerations of the perineum or rectum are repaired. Second, if there is not enough scrotal skin remaining to re-cover the testicles, the testicles can be separated and implanted directly beneath the skin on the inner aspect of each thigh. Some surgeons initially rotate a full-thickness skin flap from each thigh to form a new scrotum and covering for the testicles. In any event, the incidence of partial or complete loss of spermatogenic function is high. Third, the denuded penis is covered immediately with a free, split-thickness skin graft.

INJURIES OF THE SCROTUM AND SCROTAL CONTENTS

Injuries of the scrotum and scrotal contents may be penetrating or nonpenetrating. These injuries may also be classified according to the location of the injury: scrotum, testicle and epididymis, spermatic cord, or a combination of these sites.

Penetrating scrotal injuries are usually caused by gunshot wounds and knives or other sharp objects. The author treated a young boy whose scrotum was impaled when he attempted to jump over a picket fence. Lacerations of the scrotum may cause considerable hemorrhage and are frequently accompanied by penetrating injuries of the testicle, spermatic cord, penis, or urethra. Nonpenetrating scrotal injuries or contusions resulting from a blow to the genitalia are usually accompanied by ecchymosis and, occasionally, considerable hematoma in the loose areolar tissue beneath the dartos layer of the scrotum. Avulsion of the scrotal and penile skin was discussed in the previous section.

Penetrating injuries of the testicle and epididymis are usually accompanied by injury of the scrotum and, frequently, by a collection of blood between the visceral and parietal layers of the tunica vaginalis (hematocele). Contusion of the testicle may result from a crushing type of trauma. Dislocation of the testicle is a rare injury which may occur when a severe, upward blow is delivered to the scrotum. The testicle is displaced from the scrotum to the perineum, thigh, lower abdomen, or base of the penis. As a result, there is considerable swelling and ecchymosis of the genitalia. The blood supply to the dislocated testicle usually remains intact.

Penetrating injuries of the spermatic cord may sever the vas deferens, in addition to the testicular artery or veins in the pampiniform plexus. Occasionally the vas deferens is crushed or transected during a hernioplasty, particularly in infants and small children. Blunt trauma of the scrotum may also rupture one or more veins in the pampiniform plexus, resulting in a scrotal hematoma.

Signs, symptoms, and diagnosis. Nonpenetrating injuries of the scrotum are diagnosed primarily by history and the observation of scrotal ecchymosis or hematoma. Testicular injuries frequently result in a hematocele, which may be differentiated from a hydrocele in that the former does not transilluminate and often follows a history of scrotal trauma or the tapping of a hydrocele. Dislocation of the testicle may be evident immediately following trauma, but there is difficulty in making a diagnosis once swelling and ecchymosis of the scrotum occur. Injuries of the vas deferens frequently pass unrecognized.

Treatment. In penetrating scrotal injuries, associated trauma of the penis and urethra should be ruled out. Foreign material is removed and the scrotal wound debrided. Debridement should be conservative, since the scrotum has a remarkable regenerative power. If a hematoma or hematocele is present, the clot is evacuated and the bleeding vessels ligated. If the testicle is lacerated, the tunica albuginea is sutured with interrupted, horizontal fine chromic mattress sutures. The scrotum is drained and the scrotal incision is approximated with everting fine chromic sutures. Occasionally, an injury of the testicle is so severe that orchiectomy is necessary. Injuries of the epididymis are treated in the same manner as testicular injuries. If an injury of the vas deferens is recognized at the time of the original surgery, an attempt should be made to restore the continuity of the vas deferens by an end-to-end anastomosis.

Contusions and small hematomas are usually treated conservatively by elevation of the scrotum, bed rest, and cold compresses during the acute stage. When the patient becomes ambulatory he may be fitted with a suspensory and placed on a regimen of hot sitz baths. If bleeding within the scrotum continues, as indicated by an expanding hematoma, the blood clot should be evacuated, bleeding vessels ligated, and the scrotum drained. A dislocated testicle is occasionally replaced by manual manipulation but surgery is usually necessary. Associated penile and urethral injuries are treated as previously described.

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GIANT HYPERTROPHY of the gastric mucosa is characterized by thick and tortuous folds without a uniform pattern and often is mistaken for neoplasm. The folds appear mottled on barium-contrast roentgenograms but may not be apparent if too much contrast medium is given or if the crypts between the folds are closed by thick layers of mucus or because of tight apposition. Usually sulci between rugae can be seen fluoroscopically because mucus is dislodged from folds by palpation and folds can be separated by manipulation. Several roentgenographic signs are suggestive of the rare condition: (1) Rugae are never enlarged along the lesser curvature or antrum but are greatly enlarged along all or part of the greater curvature, which has a ragged, nodular, and crinkled outline. (2) An abnormally thick gastric wall along the greater curvature can be detected by measuring the distance between the faintly lucent serosal line and the column of contrast medium in the stomach. (3) Barium mixes with excessively thick layers of mucus to produce a fine reticular pattern, often appearing as an opaque shadow interrupted at regular intervals by numerous small spaces.

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Seasonal Variation in Aberrant Group Behavior

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Since the dawn of recorded civilization, man has been interested in cyclic variations in his behavior. For whatever reason (perhaps avoidance of the stigma of astrology) and with the exception of diurnal cycles, modern behavioral scientists have generally ignored these sources of variance in human behavior.

Man lives on a planet which circles a sun, presents different surfaces to it at regular intervals, varies in distance from it, and is subject to regularly varying temperatures in terms of these relationships. This planet, in turn, is circled by a satellite which, among other things, affects the tides of its oceans, and, in cyclic fashion, affects the behavior of at least some of its lower organisms in known ways. Barometric pressures and degrees of humidity vary from time to time and from place to place.

It is obvious that the behavior of man is affected superficially by these perodically occurring events: He wears less clothing when it is hot, he seeks shelter from storms, he fishes at certain levels of tide, and he sleeps more frequently when the sun is on the opposite side of the earth. Therefore, it is conceivable that more fundamental behaviors may be affected either directly by these phenomena or indirectly through the growth of cultural habits centered around these events.

One method which can be utilized to study at least one of these problems is to consider behavior in terms of its characteristics at different periods of the year. Some extreme forms of human behavior are those which lead to hospitalization in a state mental hospital. Study of any possible variations in the time of the year that different types of people enter state hospitals might shed light on this problem.

Bradley and Lucero[1,2] found that psychoneurotics and people in the 60 through 69 age group varied systematically in the times of the year that they entered one state mental hospital. Other groups did not vary. Their study included both first- and multiple-admission patients. Since between 65 and 90 per cent of first admissions to state hospitals do not return, it was felt by the present investigators that this group and the multiple-admission group may differ in certain important aspects.

The present study attempts to determine whether there is seasonal variation in first-admission rates for different groups entering state mental hospitals.

METHOD

Information was gathered on 12,318 consecutive first admissions to Minnesota state mental hospitals (schools and hospitals for the epileptic and mentally defective were excluded) from July 1, 1952, through June 30, 1956. This information was placed on IBM cards and the data processing was done on the IBM 101 sorter and desk calculators. The following are the groupings: total, sex, marital status, age, and diagnosis. Marital status was listed as single, married, and other. (Only three years were studied in this manner as the information for one of the years was not available. All other analyses were done for the entire four-year period.) The age groupings were: under 20, 20 through 29, 30 through 39, 40 through 49, 50 through 59, 60 through 69, 70 through 79, and 80 and over. Broad categories were used for diagnosis: affective (21),* mild disorders (50, 51.2, 53, 54), organic (01-14, 15.1, 16, 17.2-17.3, 18-19), mental deficiency (60-62), geriatric (15.0, 17.1), acting-out disorders (51.0-51.1, 51.3, 52.0-52.2), involutional (20), schizophrenic (22-23), addictive (52.3-52.4), and neurotic (30-40).

Each of these groups was studied in terms of its members' entering hospitals during the separate months of the year. Two types of analyses were carried out. The first was a two-way analysis of variance in terms of both months and

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*The numbers refer to the standard nomenclature of the American Psychiatric Association.

years. This was done to rule out the possibility that a particular month in a particular year could affect the four-year total for the month and lead to the false conclusion that this month was high (or low) in general. The Poisson distribution for admissions was assumed; the square root transformation was used, the mean square error was assumed to be 1/4, and χ^2 was used as the test statistic.[3] Though interaction effects were found, their subtraction left the results of the analysis of variance technic still in agreement with the simpler second technic, χ^2 for total group. The χ^2 for total group technic involved setting up the theoretic frequency for each month by assuming that admission by month should be proportionate to the percentage of total days in the study represented by that month. In the interests of brevity, the results of the simpler χ^2 technic will be reported in this paper.

RESULTS

The table shows the results of the analysis for significant variation in admission rates between months, averaged over the four-year period for total group and for subgroups. The months of highest rates for total group were April, June, January, and September, in that order. The months of lowest rates were November, December, and October. The variation was significant with $P = .005$.

The male admission rates show striking ($P = .005$) monthly variation, with high admission rate in April and low admission rate in November. There is no conclusive evidence of variation in monthly rates for females.

In the analysis by diagnosis, both the affective and the mild disorder groups show significant ($P = .005$) variation between months, with high rates in June and low rates in December. The affective group also shows a high rate in April, while the mild disorder group shows a high in November. The organic and the mental deficiency groups shows significant ($P = .005$ and .01, respectively) variation between months, with high rates in January and February for the former and in January and June for the latter. The only other diagnostic group showing significant ($P = .025$) variation between months is the geriatric group. The high rate for this group was in September and the low rate, December.

The analysis by age substantiates the result for the geriatric group. The only age group showing significant ($P = .005$) variation between months was the group 80 years and over. The high rates for this group occurred in August and September.

DISCUSSION

That significant monthly variation occurs both in general and in particular groups would appear to be established. What accounts for this can only be arrived at by research specifically designed to determine its meaning—and this for each group independently.

It is tempting to speculate about the reasons for these variations. It should be remembered that *post hoc* reasoning is easy, quite correct logically, and usually fallacious. Since most people over 70 enter hospitals in September, it would appear obvious that the extremes of heat in late August and early September are responsible. Bradley and Lucero,[1] in their study of combined admission groups, found that, most frequently, the 60 through 69 age group entered

MONTHLY VARIATION IN ADMISSIONS TO MINNESOTA STATE MENTAL INSTITUTIONS BY SEX, DIAGNOSIS, AGE, AND MARITAL STATUS
(July 1, 1952, through June 30, 1956)

*Group**	*Month*												*Number*	χ^2	*Probability*
	J	*F*	*M*	*A*	*M*	*J*	*J*	*A*	*S*	*O*	*N*	*D*			
Total	+†			+		+					—	—	12,318	30.656	.005
Male				+							—		7,536	28.818	.005
Diagnosis															
Affective			—	+		+						—	588	28.757	.005
Mild disorder						+		—			+	—	209	27.082	.005
Organic	+	+											697	26.790	.005
Mental deficiency	+					+				—		—	194	25.971	.01
Geriatric									+		—	—	3,538	22.421	.025
Age group															
Over 80								+	+		—	—	1,446	31.618	.005

*The following groupings showed no significant variation: Females; acting-out, involutional, schizophrenic, and neurotic disorders; all age groups under 80; and marital status.

†Plus sign indicates greater incidence and minus sign shows lesser incidence (χ^2 for cell exceeds 9) than is to be expected.

in November. They hypothesized that temperature changes in November may have been the cause and that people 60 through 69 were more susceptible to disease than those younger or older! (Once burnt, twice shy.) *Post hoc* thinking can produce hypotheses for future research, but it cannot produce explanations.

Nevertheless, there are certain interesting questions that arise from the data. What is the cause of high rates in the spring and low rates in early winter? Although there appears to be a trend for women to vary (χ^2 for total is greater than for males alone), they do not show anything like male variation. (Male variation occurs despite the inclusion of the addictive group which is preponderantly male.) If stress plays a role in making people sick enough to enter state hospitals, why is there no variation in the first-admission neurotic group? It is tempting to reach a very easy conclusion about the decrease in admissions in December. The thought of the holidays might help people mobilize for a short period or relatives might hold off on committing their loved ones until the festivities are over. January should then be a high admission month, which it is—but only for groups which form, at most, 19 per cent of the total.

Preliminary analysis by institution indicates that administrative policy of the various hospitals plays no part in the monthly variation. Also, urban and rural institutions follow similar trends.

Further sorting of these data and other current data will be done by the authors to determine male and female similarities and differences, the saturating effect of having alcoholics admitted alongside other patients, rural-urban differences, and the differential effect of multiple admissions.

Comparable studies in similar states as well as other geographic areas and cultures would prove of inestimable value. Results of a Southern Hemisphere study would help in answering questions concerning seasons. A study done in an area of relatively constant mild temperature (Hawaii) would show no variation in admissions if temperature is the most important factor. Studies in a non-Christian, non-January 1st–New Year type of culture would contribute to the answering of the question concerning the effect of these holidays on admissions.

Past work, though not directly related, can be of help in hinting at causation. One of the authors is surveying the existing world literature on this and related topics. Some surveys of yearly cyclic human behavioral variation have been made. It is difficult to sort out the good from the suspect in past work since so much of it has been presented merely in summary form. Several interesting facts can be mentioned, however. Singapore and Hong Kong and India show the same variations as Minnesota in terms of spring and early winter variability. This would seem to militate against an interpretation of the Minnesota data in terms of Christian cultural habits. Since June is the marriage month in Western culture, it is tempting to assume that cultural factors might lead the "young man's fancy" toward love and that the insecure young man might get sick. Data from Australia, New Zealand, and South Africa show the highest incidence of mental illness in the spring (October, November, and December) and the lowest in winter (April, May, and June). This would appear to pinpoint spring, and not the marriage period, as such, as the malevolent period. An additional bit of evidence from another behavioral area thoroughly confuses the issue. If the occurrence of pregnancies can be taken as a rough index of frequency of sexual contacts and if sexually directed behavior is responsible for part of the variance, then October, November, and December should be the months of greatest admissions in Minnesota, for these are the months in which the greatest number of pregnancies occur.

Leaving all speculation, one fact stands out: Human beings vary in terms of the time of year that they first enter mental hospitals. Other studies are under way to determine the effects of other natural (physical) phenomena on various behaviors of the mentally ill.

Whether it is possible to generalize these results and apply them to the behavior of normal people is, of course, impossible to say. Yet it is exceedingly difficult to avoid asking the questions: How do most human beings behave in April and how do they behave in November? How are these behaviors different?

There is, however, a bit of practical knowledge to be gleaned from the data. Due to the heavy influx of geriatric patients in late summer and early fall, it would appear wise for hospital administrators to arrange the vacation scheduling of personnel connected with admission and early treatment of this type of patient so that a maximum are on duty at this time. The increased number of manic-depressive patients in the spring and the heightened danger of suicide at this time should be borne in mind by all physicians. The only groups showing increased admissions in January are those which have been chronic, and that they are kept at home for the holidays would appear to be an adequate tentative hypothesis. Administrators of hospitals should keep this in mind. And, of course, the general pattern of increased and diminished admission should be planned for.

SUMMARY

Data on 12,318 consecutive first admissions to Minnesota state hospitals over a four-year period were studied in an attempt to determine any variation in the months in which persons became ill enough to enter mental hospitals. It was found that they do vary—both as a whole and in terms of certain subgroups. Further research is being undertaken by the authors and a plea has been made for similar studies in other areas. It is suggested that the data as they now exist can be of practical value in helping both the hospital administrator and the general practitioner in planning, both for higher incidences in general and for specific types of variation.

The authors are indebted to Adeline Foss, Bartholomew Hsi, David Lykken, Paul Meehl, Richard Pogue, William Schofield, Thyrza Tyrrell, and Linda Vikan for their assistance.

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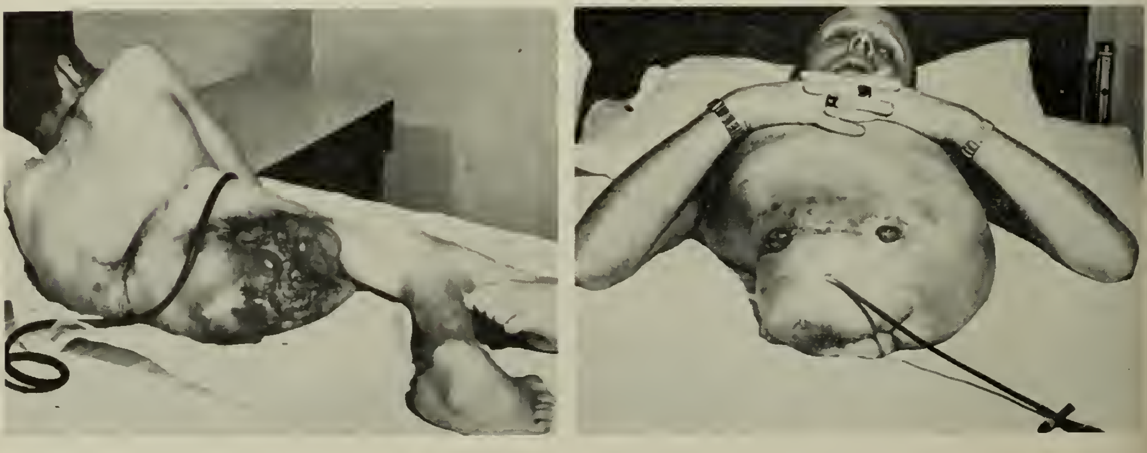
HEMICORPORECTOMY is technically feasible. If patients so treated can be rehabilitated, removal of nonfunctioning portions of the body may become an accepted procedure in the treatment of paraplegia and, possibly, of anal, rectal, perineal, or pelvic carcinoma without distant metastases. A lumbosacral amputation was performed on a 29-year-old paraplegic man. He had a well-differentiated squamous-cell carcinoma that had developed eighteen months before in a long-standing decubitus ulcer which covered the entire sacrum and extended into the perineum and scrotum. When abdominal exploration revealed no malignant spread within the peritoneal cavity, a colostomy and mucous fistula were created. The amputation was done three weeks later. An anterior incision was made from one anterosuperior iliac spine to the other, the genitals were removed, the bladder was sutured to the anterior abdominal wall, and peritoneal contents were reflected upward. Only the blood supply to the bladder was preserved. The spinal column was divided between L-5 and S-1, and posterior skin flaps were created well above the ulcer. The rectus sheath was then sutured to the sacrospinalis fascia on either side of the spinal column, and muscle, fascia, and skin flaps were closed. The reduction in vascular space limited the amount of blood and fluid that could be administered. The patient has had no hemodynamic, cardiac, or respiratory difficulties. Since the lower part of his body had been totally useless, he moves in bed with greater ease than before the operation and nursing care is simplified.

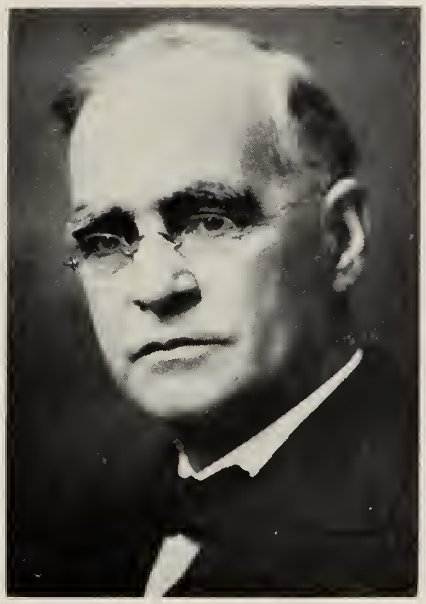
J. BRADLEY AUST and KAREL B. ABSOLON: A successful lumbosacral amputation, hemicorporectomy. Surgery 52:756-759, 1962.



James Edward Moore, M.D.

Educator and Surgeon

His Life and Work



RONALD DIETZMAN, M.D.
Minneapolis

THE FIRST chairman of the Department of Surgery of the University of Minnesota Medical School was Dr. James E. Moore, educator and surgeon.

The son of a Methodist minister, Dr. Moore was born March 2, 1852, in Clarksville, Pennsylvania.[1] He attended the public schools of Western Pennsylvania and the Poland Union Seminary in Ohio before beginning his premedical education at the University of Michigan. A year later he left for New York's Bellevue Medical College where, after two years, he received his Doctor of Medicine degree (at the age of 21). He spent two years in the hospitals of New York and Philadelphia and then six years as a general practitioner in Emlenton, Pennsylvania, before going to Minneapolis, Minnesota, in 1882. After two years of practice he left to study in Berlin, Paris, and London. Upon his return to Minneapolis in August of 1888, he sent out a letter announcing himself as a specialist in general and orthopedic surgery, the first specialist west of New York.[2]

Dr. Moore then embarked on an academic career. He became professor of orthopedics at the old Minneapolis College Hospital and was associated with the St. Paul Medical School. With their absorption into the newly founded University of Minnesota Medical School in 1888, he continued to direct orthopedics. Shortly thereafter he was appointed clinical professor and then professor of surgery, at which time he resigned the chair of orthopedics. In 1908, at the age of 56, he was appointed director of the Department of Surgery, a position which he held until his death in 1918. One of his biographers, Arthur T. Mann, states that Dr. Moore "took an active part in the reorganization of the medical school and was one of the original three about whom the new faculty was formed and with whom the selection of its new members largely rested. He was intuitive, clear minded, forceful, and a born teacher, excelling in clinical subjects. His courtesy, his earnestness, and his personal charm drew his students to him naturally and surely and made a lasting impression upon them." Dr. Moore also served on many Minneapolis hospital staffs; he was orthopedic surgeon in charge at St. Mary's and Asbury, surgeon in charge at St. Barnabas, and surgeon at the Northwestern Hospital for women and children. Although he maintained an active private practice until three years before his death, he devoted a large share of his time to the University. According to letters in his file,[2] he often gave University duties precedence over accepting new private patients. In 1915, he devoted himself to full-time academic medicine.

Dr. Moore actively participated in a number of medical societies: he was the first vice-president of the American Surgical Association in 1905, president of the Western Surgical Association in 1902, member of the Judicial Council of

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the American Medical Association and chairman of its Surgical Section in 1903, a fellow of the American College of Surgeons and member of the Board of Governors at its founding, president of the Minnesota Academy of Medicine, president of the Hennepin County Medical Society, and delegate from the University of Minnesota to the International Medical Congress in Rome.[1]

His close and influential friends included men such as Frank F. Wesbrook, Elias P. Lyon, George E. Vincent, W. J. Mayo, William Osler, and George Crile, Sr. Many of the letters in his files were from patients who appreciated his genuine sincerity and "moderate bills." However, he was not without adversaries, as evidenced by the following letter:[2]

> Minneapolis, Minnesota
> March 2, 1915
>
> Dr. James E. Moore
>
> Dear Sir:
>
> I feel inclined to bring suit against you for removing my gall bladder . . . not because the operation was not successful and that I am not a well man, but because it has unfitted me for my work.
>
> I was, as you know, a successful life insurance agent and brought my company more good risks than any man in this state. Since you cut out my supply of gall, I find I lack the same assurance and seem a complete failure in my old work. I fear I shall have to apply as an office assistant to one of the prominent doctors in town or else take to the ministry, unless my lawyer can succeed in bringing you to such terms that I may have a comfortable income for life. . . .[6]

In 1910, while lecturing to a group of junior medical students, he was buried in debris from a fire that destroyed the roof of Millard Hall.[3] His life was despaired of for days, and, although he pulled through, he never regained his former robust health. He also took over a tremendous teaching load, which drained his health considerably, when many of the staff doctors entered the service during World War I. In 1918, at the age of 66, he died at home in Minneapolis after a six-month illness with pernicious anemia. He had arranged for the bulk of his estate to be left, after the death of his widow, to the Surgical Department of the Medical School.

THE GRADUATE SCHOOL

Dr. Moore's work can be divided arbitrarily into three phases: The Graduate School of Medicine, a book on *Orthopedic Surgery*, and his published articles. Dr. Moore was the first man to propose a Graduate School of Medicine at the University of Minnesota, which was the first such program in the United States. In the minutes of the Administrative Board on February 5, 1914, it was noted that "Dr. Moore proposed the creation of the degree of Master of Surgery, under conditions to be determined. A committee of three, consisting of Drs. Moore, Stewart, and Robertson was appointed to present the details of work and qualifications for this degree.[4] One month later, the committee made the following report which was approved: "We recommend that a standing committee of five be appointed by the Board, to be known as 'The Committee on the Master's Degree in Surgery.' We recommend that the University of Minnesota offer the degree of C.M. to graduates in Medicine and that the candidate for this degree be obligated to meet the following requirements . . . . "[4] In essence, it was stated that the candidate must have the degree of M.D. from a reputable medical college and must have been in practice for five years, one of which shall have been spent as an intern in an acceptable hospital. He was required to spend one year in resident work at the University of Minnesota, although this year need not be continuous but spread out over a longer period of time, and " . . . when a candidate is found deficient in clinical experience, he may be provided with a hospital position which will enable him to secure the necessary experience. This hospital should be so situated that the candidate can devote his spare time to prescribed courses in pathology, experimental surgery, bacteriology, anatomy, operative surgery on the cadaver, or research work, and when he has ample clinical experience he may be required to devote the whole of his resident work to these subjects."[4] The resident was allowed extramural work up to a maximum of 25 per cent of the required work. He could receive his degree after being judged on the fitness of his work and a thesis, which he had to defend.

Four months later, Dr. Moore and his committee proposed the Ph.D. program in Medicine which was approved. Requirements for admission would be an M.D. degree from an approved hospital and a one-year, approved internship. Although elastic, the graduate course was to continue a minimum of three years and lead to a degree of Doctor of Science in surgery, medicine, or ophthalmology, among others. The candidate was required to study at the University of Minnesota during his last year, as well as to take two years of graduate courses in certain specialties for which he would receive only a certificate of proficiency. These candidates, or teaching fellows, were to be in residence eleven months of the year and were not permitted private practice in any form. Dr. Moore's foresight in laying out these programs is obvious, for his basic concepts remain essentially unchanged in the present graduate medical program of the University of Minnesota.

HIS BOOK ON ORTHOPEDICS

Dr. Moore published his book, *Orthopedic Surgery*,[5] in 1898. Although he intended it to be used as a textbook, it was not as widely accepted as he would have liked; the reviewers considered it too middle-of-the-road for their time. Dr. Moore advocated an individual approach to the patient, neither emphasizing operative intervention nor leaving the patient to nature alone. Although he used some orthopedic mechanical equipment himself, he was opposed to the overemphasis placed on "orthopedic gadgets and machines" prevalent at that time. It is interesting to note, however, that his approach was not too dissimilar to that used by present-day orthopedists. Also consistent with his times, most of the book is concerned with tuberculosis and osteomyelitis; other forms of orthopedic pathology were given minimal attention. One of the most amazing points of contrast to present-day orthopedic text is that there is not a single reference made to the use of x-ray.

PUBLISHED ARTICLES

A prolific writer, Dr. Moore published over 200 papers during his lifetime. His clinical experiences were the bases for much of his medical writing.[6] His original contributions mainly treated surgical technic and bone and joint surgery. The scope of his interests is apparent from his range of topics: Pott's disease, bowel obstruction, extra-uterine pregnancy, hysterectomy, cholecystitis, hernias, prostatic surgery, spina bifida, chloroform anesthesia, abdominal surgery, exploration, and a plea for larger incisions. He wrote extensively on osteomyelitis, appendicitis, and "the philosophy of medical education."

Dr. Moore was the first physician in the Northwest to call attention to "osteomyelitis of the neck of the femur," which had been incorrectly diagnosed before that time. Dr. Moore's position on this topic is best stated in two of his papers: "Osteomyelitis Involving the Hip Joint—A Condition Heretofore Erroneously Designated Acute Epiphysitis"[7] and "Acute Inflammation of the Neck of the Femur."[8] At that time, acute suppurative inflammation affecting the joints of children was divided into three groups: (1) acute suppurative arthritis of infants, (2) acute osteitis of growing bones, and (3) epiphysitis. It was with this third group that he took exception. He felt that the disease occurring in the hip joint (beginning near the epiphyseal line) and described by Macnamara under the name "epiphysitis" was really an acute osteomyelitis. This disease began in the neck of the femur or the shaft—not the epiphysis—and the organisms involved were primarily the streptococci and rarely the staphylococci. The tubercle bacillus did not attack the epiphysis. Because the epiphyseal line was the point of least resistance, it soon gave way and the epiphysis floated free. When operating, many surgeons made the mistake of not looking at the neck of the femur, and, therefore, the erroneous diagnosis of epiphysitis was made in many instances. Dr. Moore felt that many could be cured by proper drainage after an early diagnosis.

Eleven papers on appendicitis, some of the earlier of which were published at the time this disease was first being treated successfully, reflect another strong interest; one, entitled "Recurrent Appendicitis—A Clinical Lecture,"[9] emphasizes his views at that time. Early observers believed that the problem (in perityphlitis) was an inflammation beginning in the areolar tissue behind the cecum. They had thought that the cecum was not covered by peritoneum posteriorly, but anatomists of Dr. Moore's day showed that it was. "We have learned that the disease begins in the vast majority of cases as an appendicitis and is consequently intra-peritoneal."[9] If the pathologic process was slow, then it became walled off and resulted in a circumscribed peritonitis. In this case, the treatment he advocated was that of incision, irrigation, and drainage. A later paper, "Has the Last Word Been Spoken Concerning Appendicitis,"[10] stated his final views on appendicitis. As to the problem of when to operate, he advocated surgery as soon as the diagnosis was made, abandoning the program of waiting for localization and subsequent drainage of the abscess. The mortality rate with immediate surgery was reduced to 5 per cent, compared with 20 per cent mortality associated with delayed drainage. He also stated that Fowler's position, used at that time to localize pus in the pelvis, was merely a passing fancy. He found that his patients did as well lying flat in bed and were much more comfortable. In the discussion that followed his talk, Drs. Ochsner of Chicago, Finney of Baltimore, and Davis of Massachusetts General Hospital all agreed on the soundness of early surgery but still advocated Fowler's position and their own individual drainage methods.

It is interesting to note in the light of Dr. Moore's interest that the first two patients of the Surgical Clinic at the University, which opened September 28, 1911, included a 23-year-old woman with appendicitis, treated by appendectomy, and a young Indian boy with osteomyelitis of the neck of the femur, treated by drainage.[11]

Two papers, in particular, revealed Dr. Moore's philosophy of medical practice and education. In a discussion at the end of Arthur Bevan's paper, "Problem of Unnecessary Operations and Incompetent Surgeons,"[12] Dr. Moore stated that at Minnesota they were trying to correct this problem by upgrading surgery through the establishment of a Graduate School in Surgery. It was their hope to raise the standards of surgical practice, which he felt was the duty of the surgeons themselves. Then in his paper, "The Development of the Faculty of the Medical School of the University of Minnesota,"[13] he defined the intended goal of the Graduate School in Medicine: to train teachers as well as practitioners. This goal is essentially the same today. He stated: "We have gradually developed a method in the University of Minnesota which corresponds to that of successful teaching institutions everywhere—of selecting young men and educating them for positions on the faculty so that a very important function of our medical school is to educate medical teachers."

Presented at a meeting of the James E. Moore Surgical Historical Society under the auspices of the Department of Surgery, University of Minnesota.

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INFESTATION with Giardia lamblia is frequently coincidental with development of malabsorption syndromes, but conclusive evidence is lacking for a cause-and-effect relationship. Massive infestation is commonest in low socioeconomic groups where malnutrition may contribute to malabsorption and, through debilitation of the patients, furnish a favorable environment for the parasite. Improvement of intestinal absorption after treatment for giardiasis does not signify a relationship, since treatment includes hospitalization, adequate diet, and vitamin supplements in addition to quinacrine hydrochloride therapy. No carefully controlled investigation of objective improvement after therapy and eradication of parasites has been carried out. Of 430 patients with giardiasis, 32 had evidence of fat in the stools. In 9 patients with steatorrhea or azotorrhea, giardiasis was apparently unrelated to malabsorption.

P. J. PALUMBO, H. H. SCUDAMORE, and J. H. THOMPSON, JR.: Relationship of infestation with Giardia lamblia to intestinal-malabsorption syndromes. Proc. Staff Meet., Mayo Clin. 37:589-598, 1962.

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Book Reviews . . .

Tranquilizing and Antidepressive Drugs

WILBUR M. BENSON, M.D., *and* BURTRUM C. SCHIELE, M.D., *1962. Springfield, Illinois: Charles C Thomas. 89 pages. $5.25.*

According to the authors, in no other field of medicine than psychiatry have so many new drugs appeared in so short a period of time. Under these circumstances it has been impossible for busy psychiatrists to know which drugs are the best and which should be used for certain types of patients. Hence the information given in this book has been much needed. The volume is well written, the text is concise, and it is full of information that bears the stamp of honesty and good judgment.

The book is divided into 2 parts: (1) the tranquilizing drugs and (2) the antidepressive drugs. The authors know that some physicians have reported that in their studies, some of the antidepressive drugs had no more effect than did the placebos used; but still the statement is made in this book that "the utility of most of these drugs has now been well documented." Certainly today in mental hospitals there is much less use of "restraint;" also, the discharge rate of patients, especially schizophrenics, is now exceeding the admission rate. Between 1955 and 1960, in the New York state hospitals, the number of persons on restraint went down from some 27 per 1,000 to 2 per 1,000, while the number of persons on tranquilizing drugs has gone up from some 20 per 1,000 to some 500 per 1,000.

Also, with the tranquilizers, there has been less rehospitalization of the patients who were sent home much improved.

The evidence in regard to the antidepressants is not so definite. Certainly not all depressed patients will benefit from taking the new drugs, but evidently many persons are being helped because the number of people in a mental hospital who receive electroshock treatments is not half of what it used to be. One of the good things the new drugs often do is to make many an excited patient so quiet and rational that he can accept psychotherapy and profit from it. All physicians who use these new drugs must keep remembering that they can be toxic.

For all physicians who have to use the tranquilizers and antidepressants, this book will be invaluable and so should be kept within easy reach. There is a splendid list of the new drugs, with brief statements as to their value. There is a fine bibliography and a good index.

WALTER C. ALVAREZ, M.D.
Chicago

Radioactive Isotopes in Medicine and Biology

SOLOMON SILVER, M.D., *1962. Philadelphia: Lea & Febiger. 347 pages. Illustrated. $8.00.*

The diagnostic and therapeutic uses of radioactive isotopes used in clinical practice are presented in this clear and interesting book. For the physician or student who is unfamiliar with the use of radioisotopes, this affords an opportunity to become familiar with application of the radioisotopes in medicine and biologic study.

The book represents the second edition of *Radioactive Isotopes in Clinical Practice* by Quimby, Feitelberg, and Silver. However, some technical procedures have been omitted. This book acts as volume II of a companion volume, *Radioactive Isotopes in Medicine and Biology*, by Quimby and Feitelberg, which presents the basic physics and instrumentations relating to the isotopes.

This comprehensive presentation makes reference to almost all clinical situations in which the use of radioisotopes is applicable. An extensive section on the thyroid gland includes problems of iodine metabolism, diagnostic tests of thyroid function, and the therapeutic use of I^{131} in thyroid disease. This is the result of the author's extensive experience in this field. The hematologic uses of radioisotopes are clearly presented and are a helpful guide for the study of blood, including hematologic diseases and blood flow. The section on ferrokinetics is excellent.

The use of radioisotopes in diagnostic tests, as well as treatment of some diseases, requires that all physicians be familiar with the technics and therapies. This book offers a clear orientation to the problem. Of particular value is the bibliography offered. A careful selection of articles has been made so that one interested in a special field can quickly gain access to more extensive data. Because of this, the book is useful to the investigator who has not had a broad experience with various isotopes.

The illustrations are few in number, and there should be more diagrammatic evidence of the results of tests and metabolic functions as measured by isotopes. The appendix includes some useful physical data for the isotopes and some characteristics of man that appear unrelated but are still of interest.

B. J. KENNEDY, M.D.
Minneapolis

Correlative Neuroanatomy and Functional Neurology

JOSEPH G. CHUSID, M.D., *and* JOSEPH J. MC DONALD, M.D., *eleventh edition, 1962. Los Altos, Calif.: Lange Medical Publications. 384 pages. Illustrated. $5.50.*

All phases of clinical and basic neurology are covered in this eleventh edition. The volume is arranged so that one may proceed through all aspects of neurology including anatomy, physiology, diagnoses, and pathology.

The opening chapters review the pertinent features of the embryology of the central nervous system. The third chapter is an excellent description of external and internal anatomy of the cerebral hemispheres, the extrapyramidal system, and brain stem structures, with a description of its normal function and various clinical syndromes which are associated with pathologic lesions. This includes descriptions of cerebrovascular and cerebrospinal fluid circulation. The chapters on the spinal cord, cranial nerves, spinal nerves, and autonomic nervous system describe not only the normal anatomy and physiology but also the functional abnormalities frequently associated with lesions in these areas.

The following 12 chapters deal with the principles of neurologic diagnoses in movement disorders, the evaluation of muscular function, and sensory and other abnormalities which may be found on neurologic examina-

(Continued on page 20A)

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BOOK REVIEWS

(Continued from page 16A)

tion. The 2 chapters on electroencephalography and neuroradiology present in a concise and orderly manner the basic features and significance of these helpful diagnostic studies.

The last chapters trace the central nervous system disorders from congenital defects of the central nervous system, vascular and metabolic diseases, and tumors of the central nervous system. The chapter on degenerative diseases of the central nervous system provides the basic essentials of each disorder in a simplified manner.

Also included are the pertinent points of the neurologic examination from the neonatal period to adulthood as well as a final list of selected reference textbooks.

This volume is a valuable aid for both the medical student and resident interested in neurology. It provides a comprehensive view of the entire field of neurology in all its aspects. The paperback is attractive and the price is not prohibitive. As such, it is certain to fulfill its purpose as a correlative text, which appears to be both comprehensive and up to date.

ALVIN W. PATRICK, M.D.
Oklahoma City

Disseminating Fungus Diseases of the Lung

ALVIS E. GREER, M.D., *1962. Springfield, Illinois: Charles C Thomas. 398 pages. Illustrated. $14.75.*

Dr. Greer's interest and extensive clinical experience in the field of pulmonary diseases are exemplified throughout this monograph.

For 35 years Dr. Greer has emphasized the need to recognize fungus diseases of the lung and to distinguish them from pulmonary tuberculosis. His enthusiasm has made other observers aware of the prevalence and existence of the mycoses. Too often the true nature of fungus diseases was not recognized until the disease was far advanced; any pulmonary disease must be suspected of being mycotic in origin.

The material has been well selected, the illustrations are adequate, and the bibliography is sufficient. This volume should be in the hands of all clinicians, whether they are pulmonary specialists or general internists.

JOHN F. BRIGGS, M.D.
St. Paul

New Books Received

Books and publications received will be listed here periodically, and such mention must be regarded as sufficient return for the courtesy of the sender. Books of special interest to our readers will be reviewed as space permits.

Know Your School Psychologist. WILMA E. HIRST, ED.D., 1963. New York: Grune & Stratton. 240 pages. $6.75.

Immunoassay of Hormones. G. E. W. WOLSTENHOLME and MARGARET P. CAMERON, editors, 1962. Boston: Little, Brown & Co. 419 pages. Illustrated. $10.75.

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Superintendent
ELLA M. LESEMAN
Prescott, Wisconsin
Tel. Congress 2-5522

Pulmonary Structure and Function. A. V. S. DE REUCK and MAEVE O'CONNOR, editors, 1962. Boston: Little, Brown & Co. 403 pages. Illustrated. $11.50.

Myxedema. JERRY K. AIKAWA, M.D., 1961. Springfield, Illinois: Charles C Thomas. 106 pages. $5.00.

Specific and Non-Specific Factors in Psychopharmacology. MAX RINKEL, M.D., editor, 1963. New York: Philosophical Library, Inc. 174 pages. Illustrated. $3.75.

Resistance of Bacteria to the Penicillins. A. V. S. DE REUCK and MARGARET P. CAMERON, editors, 1962. Boston: Little, Brown & Co. 125 pages. Illustrated. $2.95.

College Health. JOHN E. EICHENLAUB, M.D., 1962. New York: The Macmillan Co. 388 pages. Illustrated. $6.25.

Children's Radiographic Technic. FORREST E. SHURTLEFF, second edition, 1962. Philadelphia: Lea & Febiger. 92 pages. Illustrated. $4.50.

Cancer Cause and Prevention. PUBLIC HEALTH SERVICE, U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, 1962. Washington, D. C. PHS Publication No. 959. Single copies may be obtained from the Public Health Service. The superintendent of documents, Government Printing Office, Washington, D. C., can fill orders in quantity at 10 cents a copy.

Heart-Lung Bypass. PIERRE M. GALLETTI, M.D., and GERHARD A. BRECHER, M.D., 1962. New York: Grune & Stratton. 391 pages. Illustrated. $14.50.

Ciba Foundation Symposium on Transplantation. G. E. W. WOLSTENHOLME and MARGARET P. CAMERON, editors, 1962. Boston: Little, Brown & Co. 426 pages. Illustrated. $12.00.

Finger Prints, Palms and Soles: An Introduction to Dermatoglyphics. HAROLD CUMMINS and CHARLES MIDLO, 1961. New York: Dover Publications. 319 pages. Illustrated. $1.95.

The House Physician's Handbook. C. ALLAN BIRCH, 1962. Baltimore: Williams & Wilkins. 204 pages. Illustrated. $4.50.

Curare and Curare-like Agents. A. V. S. DE REUCK, 1962. Boston: Little, Brown & Co. 103 pages. Illustrated. $2.95.

(Continued on page 22A)

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BOOK REVIEWS

(Continued from page 21A)

The Exocrine Pancreas: Normal and Abnormal Functions. A. V. S. DE REUCK and MARGARET P. CAMERON, 1962. Boston: Little, Brown & Co. 390 pages. Illustrated. $11.50.

Digestive System: Part II—Lower Digestive Tract. FRANK H. NETTER and edited by ERNST OPPENHEIMER, 1962. Summit, N. J.: CIBA. 243 pages. Illustrated. $15.00.

Skin Surgery. Second edition. ERVIN EPSTEIN, 1962. Philadelphia: Lea & Febiger. 339 pages. Illustrated. $10.00.

Illustrated Manual of Neurologic Diagnosis. R. DOUGLAS COLLINS, 1962. Philadelphia: J. B. Lippincott. 177 pages. Illustrated. $12.00.

The Essentials of Paediatric Surgery. H. H. NIXON and BARRY O'DONNELL, 1961. Philadelphia: J. B. Lippincott. 315 pages. Illustrated. $9.50.

Current Diagnosis and Treatment. HENRY BRAINERD, SHELDON MARGEN, and MILTON J. CHATTON, editors, 1962. Los Altos, Calif.: Lange Medical Publications. 758 pages. Paperback. $8.50.

Nursing Care of Patients Having Chest Surgery. KATHERINE J. BORDICKS, 1962. New York: Macmillan. 65 pages. Illustrated. $3.00.

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News Briefs . . .

North Dakota

DR. ROBERT F. NUESSLE, surgeon at the Quain and Ramstad Clinic, is the new president of the Bismarck Hospital medical staff. He succeeds Dr. Paul W. Freise, president for the past twelve years. Re-elected were Dr. N. O. Brink, vice-president; Dr. Robert B. Tudor, secretary; and Dr. Clifford Peters, member-at-large. Dr. R. W. Henderson was elected as new member-at-large, succeeding Dr. Phillip O. Dahl.

* * * *

DRS. ALBERT H. FORTMAN and PAUL F. KLOSTERMAN have been elected partners in the Capital City Clinic in Bismarck. Dr. Fortman, a surgeon, is a graduate of Northwestern University Medical School, Chicago. He joined the clinic a year ago, after being associated with the Northwestern Clinic in Crookston, Minnesota. Dr. Klosterman, a specialist in internal medicine, joined the clinic in 1961, after practicing in Detroit for two years. He is a graduate of Creighton University School of Medicine, Omaha, Nebraska. Other partners in the clinic are Drs. R. W. Henderson, Myron W. Goughnour, M. A. K. Lommen, R. J. Dunnigan, and T. W. Buckingham.

* * * *

DR. GERALD J. KAVANAUGH of Fargo has been elected an associate member of the American College of Physicians.

* * * *

DR. NORMAN B. ORDAHL has been elected chief of staff of St. Joseph's Hospital in Dickinson. He succeeds Dr. R. F. Gilliland. Other officers elected were Dr. H. L. Reichert, vice-president, and Dr. A. C. Sawchuk, secretary. Dr. Ordahl was formerly vice-president and Dr. D. J. Reichert, secretary.

* * * *

DR. JOHN F. JOHANSON of Cavalier is the new president of the Grand Forks District Medical Society. He is associated in practice with Drs. Norman Helgason and Eric Larson at the Cavalier Clinic.

* * * *

DR. RICHARD S. LARSON of Velva is the new chief of the medical staff of St. Joseph's Hospital in Minot. Other officers are Dr. Marianne Wallis, vice-president, and Dr. Dale Flickinger, secretary. Serving on the executive committee are Dr. W. B. Huntley, head of surgery and physical therapy; Dr. G. H. Heidorn, internal medicine; Dr. L. L. Hoopes, obstetrics and gynecology; Dr. J. L. Devine, pediatrics; Dr. Samuel Shea, ear, nose, and throat; Dr. Darwin Kohl, eye; Dr. Gale R. Richardson, pathology; Dr. Wallis, radiology; and Dr. William C. Hurly, general practice.

* * * *

DR. MEHMET H. NAZLI, an anesthesiologist at St. Joseph's Hospital in Minot since 1959, has established private practice in his specialty. A native of Turkey, Dr. Nazli received his medical degree from the University of Istanbul Medical Faculty.

* * * *

DR. MYRON W. SCHEFLO has become associated in practice with Drs. George Countryman and Charles Tompkins at Grafton. Dr. Scheflo received his medical degree from

(Continued on page 24A)

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(Continued from page 23A)

the University of Nebraska College of Medicine, Omaha, and interned at St. Luke's Hospital in Duluth, Minnesota.

° ° ° °

DR. L. G. PRAY has been named president of the medical staff at St. Luke's Hospital in Fargo. Dr. Pray, a pediatrician, succeeds Dr. G. Wilson Hunter. Other officers are Dr. G. H. Hall, vice-president, and Dr. Robert Story, secretary.

° ° ° °

DR. DONALD A. NICELY is affiliated with the Rodgers and Gumper Clinic in Dickinson in the practice of internal medicine. Dr. Nicely, a native of Pennsylvania, received his medical degree from the University of Pittsburgh School of Medicine. He joins Drs. H. C. Larsen, K. G. Foster, N. B. Ordahl, and A. J. Gumper at the clinic.

° ° ° °

DR. F. D. MC DADE is now practicing at the Turtle Lake Community Hospital. Dr. McDade formerly practiced in Regina, Saskatchewan.

° ° ° °

DR. F. B. WEBBER, a surgeon, has become associated with the Harvey Medical Center. Dr. Webber practiced previously in Ontario and Saskatchewan.

Minnesota

DR. E. IRVINE PARSON is the new chief of staff of St. Luke's Hospital, Duluth, succeeding Dr. Elizabeth Bagley. Other officers are Dr. P. G. Boman, chief of staff-elect, and Dr. E. O. Jorgensen, secretary. Department heads are Dr. K. E. Johnson, surgery; Dr. R. P. Buckley, pediatrics; Dr. J. P. Tetlie, eye, ear, nose, and throat; Dr. W. J. Brooker, urology; and Dr. J. F. Schmid, dermatology. Dr. Parson, a surgeon, is a graduate of the University of Minnesota Medical School and interned at St. Luke's Hospital.

° ° ° °

THE CENTER FOR CONTINUATION STUDY, University of Minnesota, Minneapolis, will present the following medical continuation courses during April, May, and June: Otolaryngology, April 18 through 20; obstetrics, April 25 through 27; ophthalmology, April 29 through May 1; surgery, May 16 through 18; psychiatry, May 27 through 29; and anesthesiology, June 3 through 5. Further information can be obtained from the Director, Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.

° ° ° °

FOURTEEN MINNESOTA PHYSICIANS have been honored by the American College of Physicians. Designated as fellows in the college were Dr. Louis Tobian, Jr., Minneapolis; Dr. Robert B. Howard, St. Paul; and Drs. Lloyd G. Bartholomew, Kenneth G. Berge, James C. Hunt, Joseph M. Kiely, Gordon M. Martin, John G. Mayne, R. Drew Miller, George D. Molnar, and Philip J. Osmundson, all of Rochester. Elected as associates were Dr. A. Boyd Thomes, Minneapolis; Dr. Richard K. Winkelmann, Rochester; and Dr. James H. Kelly, St. Cloud.

° ° ° °

DR. CARSTEN H. SEECAMP has joined the staff of the Cambridge Clinic. Dr. Seecamp was formerly on the staffs of Glenwood Hills and North Memorial hospitals in Minneapolis.

* * * *

DR. ROBERT A. ALDRICH has been appointed director of the newly established National Institute of Child Health and Human Development. Dr. Aldrich was formerly an instructor in pediatrics at the University of Minnesota Graduate School, Minneapolis, and consultant in pediatrics at the Mayo Clinic in Rochester. At the time of his appointment, Dr. Aldrich was professor and chairman of the department of pediatrics at the University of Washington School of Medicine, Seattle.

* * * *

DR. WILLIAM F. MALONEY has been appointed an associate director of the Association of American Medical Colleges. Dr. Maloney was assistant dean of the College of Medical Sciences at the University of Minnesota from 1953 to 1957. He served as assistant professor of internal medicine at the university from 1955 to 1957. A native of Minnesota, Dr. Maloney is presently dean of medicine at the Medical College of Virginia, Richmond. He will assume his new position on July 1.

* * * *

DR. H. G. RICE has resigned after fourteen years as Moorhead's city health officer. Dr. V. Duane Thysell will replace Dr. Rice. Both doctors are associated with the Moorhead Medical Center.

* * * *

DR. RICHARD E. BARNES of Aurora has been elected president of the Range Medical Society. He succeeds Dr. Robert T. Kelly of Grand Rapids. Other officers elected were Dr. Bayard T. French, Hibbing, president-elect; Dr. Charles B. Will, International Falls, vice-president; and Dr. Isaac M. Prlina, Virginia, secretary-treasurer. The society is composed of 117 doctors from the Range area.

* * * *

DR. JEROME J. BALLANTINE has become associated in practice of internal medicine with Drs. James H. Kelly and Richard F. Kline in St. Cloud. Dr. Ballantine is a graduate of Indiana University School of Medicine, Indianapolis; he served his residency at the Veterans Administration Hospital in Minneapolis.

* * * *

DRS. B. W. LENZ and H. S. STRAIT have become associated in practice in Fridley. They succeed Dr. Wladyslaw Jedrzejewski who died last year in an airplane crash near Warsaw, Poland, while flying home to visit his mother. Dr. Lenz, a native of Morton, received his medical degree from the Stritch School of Medicine of Loyola University, Chicago. He practiced recently in Waconia. Dr. Strait is a graduate of the University of Minnesota Medical School, Minneapolis. A native of Jordan, he practiced previously in Waconia and Glencoe.

* * * *

DR. C. E. BIGELOW has retired from practice in Dodge Center where he had practiced in the same office for twenty years.

* * * *

DR. WILLIAM H. BICKEL, head of a section of orthopedic surgery in the Mayo Clinic, Rochester, has been elected president of the American Academy of Orthopaedic Surgeons and will take office in 1964. Dr. Bickel, a native of Pennsylvania, obtained his medical degree from Northwestern University Medical School, Chicago. He be-

(Continued on page 26A)

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NEWS BRIEFS

(Continued from page 25A)

came a fellow in orthopedic surgery at the Mayo Foundation in 1938 and was appointed to the clinic staff in 1942.

Deaths . . .

DR. JOHN F. NOBLE, 69, St. Paul pathologist, died February 5 at his home. A graduate of the University of Pittsburgh School of Medicine, Dr. Noble had served as pathologist at the University of Minnesota Hospitals, Minneapolis, and Ancker, St. John's, and St. Luke's hospitals in St. Paul.

° ° ° °

DR. SAMUEL B. SOLHAUG, 74, professor in the University of Minnesota Medical School from 1920 to 1956, died January 5 in Minneapolis. Dr. Solhaug received his medical degree from the University of Minnesota Medical School. He served as a flight surgeon at Wold Chamberlain Air Base, Minneapolis, from 1920 to 1956.

° ° ° °

DR. CHARLES B. DARNER, 51, specialist in obstetrics and gynecology at the Fargo Clinic, died February 3 in Fargo, North Dakota. Dr. Darner was a member of the Board of Trustees and a past president of the staff of St. Luke's Hospital in Fargo. A native of Wahpeton, Dr. Darner received his medical degree from the University of Michigan Medical School, Ann Arbor.

° ° ° °

DR. BERNARD D. KAISER, 34, of Belle Plaine, Minnesota, died February 9 in an auto accident near New Prague, Minnesota. A graduate of Creighton University School of Medicine, Omaha, Dr. Kaiser had practiced in Belle Plaine since June 1960.

° ° ° °

DR. WILLIAM A. SAWATZKY, 70, of Edina, died February 7 at Methodist Hospital in Rochester, Minnesota. A native of Shakopee, Dr. Sawatzky received his medical degree from the University of Minnesota Medical School. He practiced in Minneapolis for forty-three years.

° ° ° °

DR. ORVAL L. MC HAFFIE, 68, founder of the West Duluth Clinic, died February 8 in Duluth. A native of Grand Forks, North Dakota, he practiced in Duluth for forty-four years. Dr. McHaffie was on the staffs of St. Luke's, St. Mary's, and Miller Memorial hospitals. He formerly served as chief of surgery and chief of staff of St. Luke's. Widely known for his practice in industrial medicine, Dr. McHaffie was chief surgeon of the Duluth, Missabe and Iron Range Railway Company.

° ° ° °

DR. E. E. GAGE, 88, one of the founders of the Sioux Falls Clinic, died January 25 in Sioux Falls, South Dakota. Dr. Gage had practiced in South Dakota for forty-seven years. He was a graduate of the University of Nebraska College of Medicine, Omaha.

° ° ° °

DR. MONTE C. PIPER, 80, emeritus member of the staff of the Mayo Clinic in Rochester, Minnesota, died February 15 in La Canada, California. Dr. Piper received his medical degree from the University of Minnesota Medical School in 1910 and practiced in Sanborn from 1911 to 1919. He was a member of the Mayo Clinic staff from 1920 until his retirement in 1950.

COMING *in* *June*

Articles and features to be found in the next issue of The Journal-Lancet

"For many decades our whole approach to contagious and infectious diseases has rested on the principle of doctor-community collaboration," writes William F. Sheeley, M.D., Washington, D.C. Dr. Sheeley, formerly of Minneapolis, and now chief of the General Practitioner Education Project of the American Psychiatric Association, says that without this co-operation we could not have built sewage treatment plants and chlorinated community water supplies, brought about mass vaccinations, and raised human life expectancy from less than forty years to seventy and beyond.

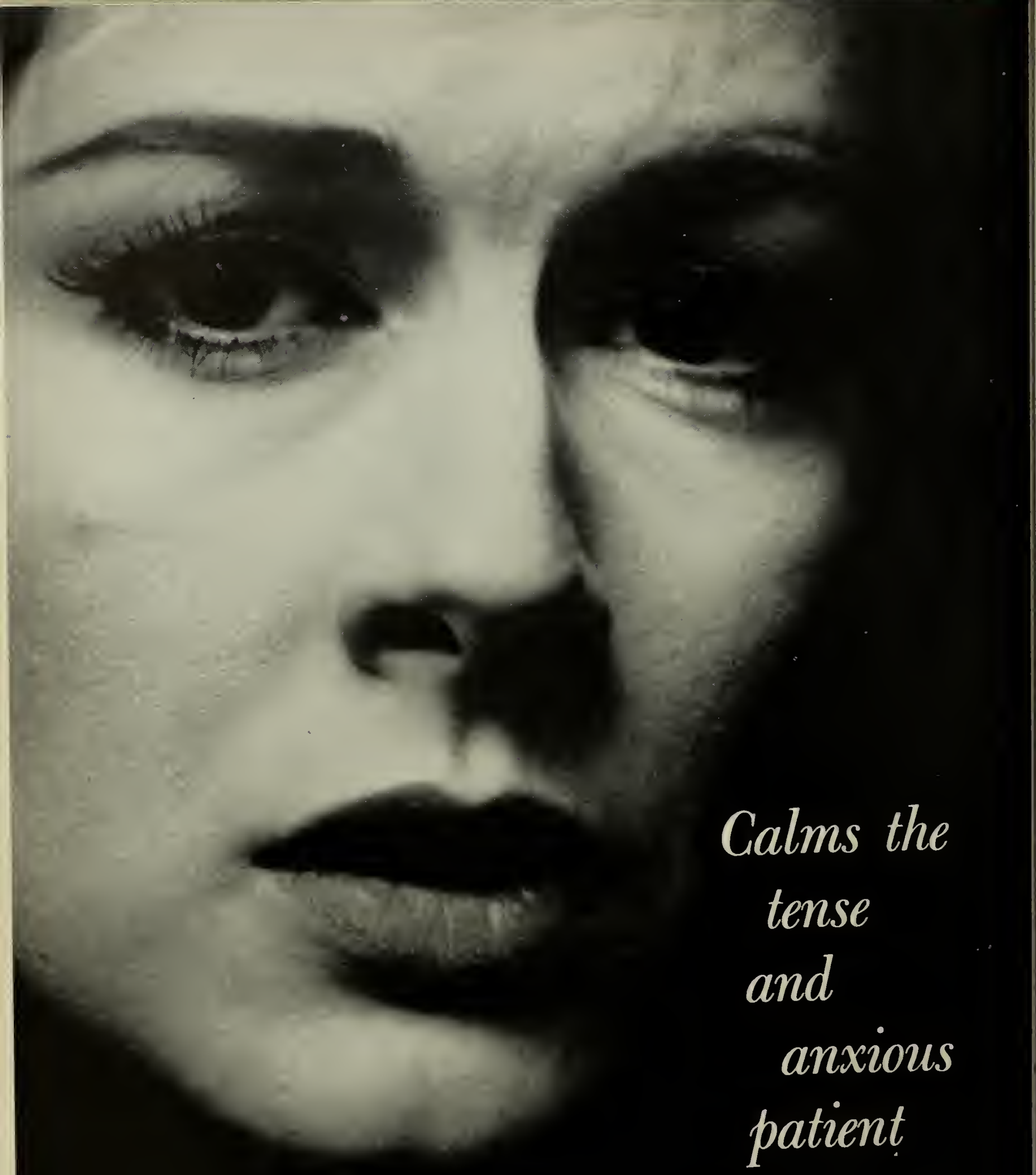
"Even as the doctor has depended on the community and has offered it direction, advice, and service in other aspects of medicine, so shall he have to depend on the community and give it direction, advice, and service in the prevention and treatment of psychiatric illness and in the management of the emotional aspects of all medical practice," writes Dr. Sheeley, whose paper is based on a talk given to the North Dakota Academy of General Practice.

It was this dictum, among others, which moved the American Medical Association to ask for massive participation of lay civic leaders in the formulation of their plans for a vigorous attack on mental illness throughout the country.

Continuing the Series on Urology for the Practitioner is a paper by Henry I. Berman, M.D., Louisville, on "The Diagnosis of Lower Urinary Tract Obstruction." The author, who is chief of urology, Veterans Administration Hospital and assistant professor of urology, University of Louisville, stresses that lower urinary tract obstruction which is present over a long period of time may cause irreversible changes. The diagnosis must be based on a carefully obtained history, associated with symptoms typical of urinary difficulty and supported by findings of obstructive lesions that exist anywhere from the meatus to the bladder. The problems of obstruction are common to both sexes from infancy to senility.

Other papers scheduled to appear in the June issue of The Journal-Lancet will include:

- **Hypertrophic Pulmonary Osteoarthropathy and Clubbing,** by John F. Lancaster, Columbus, Ohio.
- **The Surgical Treatment of Cerebral Arterial Insufficiency,** by John B. McMullen, Minneapolis.
- **Persistence of Maternal Anti-Rh_0 (Anti-D) in an Rh-Positive Infant,** by H. J. Norris and Edmond Yunis, Minneapolis.
- **Epilepsy and the Cortisone-Glucose Tolerance Test,** by E. Cheraskin and W. M. Ringsdorf, Jr., Birmingham, Alabama.
- **Treatment of Chronic Disease of the Lung with Prolonged Low Dosage of Oxytetracycline,** by Donald B. Stewart and William E. Clapper, Albuquerque.



'Miltown' (meprobamate) is a ***known*** and dependable drug. Its few side effects have been fully reported. ***There are no surprises in store for either the patient or the physician.*** This is why, despite the appearance of "new and different" tranquilizers, meprobamate is prescribed more than any other tranquilizer in the world.

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The Journal-Lancet

SERVING THE MEDICAL PROFESSION OF MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA, AND MONTANA

Glimpses of the University of Minnesota's Surgery Department

Old and New, Pedagogic and Philosophic

OWEN H. WANGENSTEEN, M.D.

Minneapolis

PART I

Our medical school came into existence in 1888 and presently will be celebrating its seventy-fifth anniversary—a short stretch of years in the history of institutions but, a period exceeding the life span of most men. The first twenty-five years is a story of struggle for survival and for facilities. The next quarter century documents the development of a spirit of research, which received its initial impetus from wise university leaders and from a peerless staff in the Department of Anatomy. During this period, our medical school became committed to the principle of full-time teachers in the clinical disciplines.

The last twenty-five years is a record of expansion in both staff and facilities, with emergence of the school from humble beginnings to a place of recognition amongst medical schools of our country. This transition has been considerably accelerated during the last few years by readily available support from a number of sources but especially from the United States Public Health Service, both for construction of facilities and direct support of research.

The generous invitation of the editor of The Journal-Lancet to the Department of Surgery to reflect its current professional and teaching activities met with a warm and enthusiastic response within our staff. The limitation of space has restricted participation in this effort to our full professors and to those responsible for major teaching functions in affiliated hospitals. The contributions of my colleagues reveal the diversified interests of an active staff which has lent great impetus and momentum to the directional growth of the department and the school.

FIRST MINNESOTA HOSPITALS WERE MILITARY

On September 21, 1805, Lt. Zebulon M. Pike arrived with a military detachment at the confluence of the Minnesota and Mississippi rivers.[1] Here he met 150 Sioux warriors under the leadership of Little Crow, grandfather of the notorious chief of the Sioux outbreak of 1862.[2]

The Sioux signed a treaty with Pike by which the United States obtained 2 parcels of land extending along the rivers, providing 155,520 acres. A military fort was then built, first known

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as Fort St. Anthony but later renamed Fort Snelling to honor Col. Joshua Snelling, Army explorer.

The first doctor in Minnesota, Edward Purcell, came in 1819 with military personnel to Fort St. Anthony, where the first hospital was built the same year.[3] It was a log structure with one wall of stone which still constitutes part of the outer wall of the historic old Fort Snelling. A second military hospital was erected at Fort Ripley in 1849 and a third at Fort Ridgely in the Minnesota River valley, not far from New Ulm. Fort Ridgely Hospital occupied a dramatic role in the Sioux outbreak. Eliza Mueller, wife of the post surgeon, earned the title "Florence Nightingale of Fort Ridgely" because of her extraordinary performance there as sole voluntary nurse to more than 40 men wounded in the battle of Birch Coulee.

FIRST MINNESOTA CIVILIAN HOSPITALS

St. Joseph's was the first Minnesota civilian hospital, built in St. Paul in 1854. The original stone building, 72 ft. long, 34 ft. wide, and 4 stories in height, no longer stands. The central part of the present structure, connecting the two wings, represents the area occupied by the original structure. In Minneapolis, the Cottage Hospital, (1871), housing 8 beds, later became the first unit of St. Barnabas Hospital.[4] It was a co-operative enterprise of Masons, Milwaukee Railroad employees, local druggists, liquor dealers, and the Ladies Society of Gethsemane Church. The reasons must have been compelling to persuade these groups to join in a common endeavor.[5]

ORIGINS OF OUR UNIVERSITY

One of the first acts of the territorial legislature of Minnesota[6] was to create the University of Minnesota in 1851, indicating it should be located at or near the Falls of St. Anthony,[1] upon land donated by the federal government. The actual opening of the university was postponed until after the Civil War. In 1867, a small preparatory school was organized. Two years later, William W. Folwell was inaugurated president of the university, the very year C. W. Eliot, who was to become America's great leader in education, was inducted as Harvard's president. Folwell's inauguration took place under simple but impressive ceremonies in a large room on the third floor of the west wing of "Old Main," now known as Eddy Hall. Despite the primitiveness of the surroundings, Folwell expressed high hopes for the future: "We thank God for foundations now laid here which may endure to the end of the world to the blessing and upbuildings of all the generations which shall follow ours. We may therefore rejoice with exceeding joy over the opportunities which our children and our children's children shall be given of learning those sciences which furnish and adorn manhood and womanhood and those arts which enrich and emancipate communities, and make small states great."[7] Folwell and the citizens of Minnesota were looking boldly and far into the future.

ORIGINS OF THE MEDICAL SCHOOL

The constitutional act of the Territory of Minnesota for 1853 made provisions for a Department of Medicine and Surgery at the University of Minnesota.[8–10] Following a proposal of Dr. Charles M. Hewitt, the Board of Regents in 1882 technically created a College of Medicine and Surgery at the university by fusing the Minnesota College Hospital and the St. Paul Medical College. However, the action provided essentially only a mechanism, in conjunction with the State Board of Licensure, for examination of applicants proposing to practice medicine in Minnesota.

Six years later, in 1888, the Minnesota College Hospital and the St. Paul Medical College, on the recommendation of a committee (1887) consisting of Drs. Perry H. Millard, C. M. Hewitt, and D. W. Hand, surrendered their property rights to the regents of the university, thus realizing Hewitt's proposal for unification of medical teaching at the University. A month later, the trustees of the Minnesota College of Homeopathy surrendered their charter to the regents, on condition that homeopathy would con-

Fig. 1. Dr. Perry H. Millard (1848-1897), dean and professor of surgery from 1888 to 1897

tinue to be taught at the university. In 1908, the state's only remaining private school of medicine, affiliated with Hamline, disbanded. When the School of Medicine at the university began its career, in the fall of 1888, it consisted of a College of Medicine and Surgery, the College of Homeopathic Medicine and Surgery, and the College of Dentistry. The College of Pharmacy was added in 1892.

Cyrus Northrup, who had succeeded Folwell as president of the university; Dr. Millard, dean of the medical college; Dr. Hand, president of the State Board of Health; Dr. G. F. French, president of the State Board of Medical Examiners; and C. F. McComb, president of the State Medical Society, were empowered as a committee to bring nominations to the Board of Regents for the faculty of the school. Millard was designated dean and professor of clinical surgery. The following additional recommendations for appointments in surgery were approved by the regents: Charles A. Wheaton, professor of principles and practice of surgery; F. A. Dunsmoor, professor of clinical and operative surgery; James H. Dunn, professor of genital urinary diseases; and James E. Moore, professor of orthopedic surgery.

A. F. Ritchie (no relative of Parks Ritchie) was made professor of anatomy; R. O. Beard, professor of physiology; H. M. Bracken, professor of materia medica and therapeutics; A. E. Senkler, professor of theory and practice of medicine; Charles H. Hunter, professor of clinical medicine and pathology; Parks Ritchie, professor of obstetrics; Alex J. Stone, professor of diseases of women; Amos W. Abbott, clinical professor of diseases of women; John F. Fulton, professor of ophthalmology and otology; and C. Eugene Riggs, professor of nervous diseases. J. Clark Stewart, who subsequently became a prominent member of the Department of Surgery, was named professor of histology and bacteriology. In all, 28 appointments were suggested and made—a very representative staff, indeed, considering that only thirty years had elapsed since Minnesota gained statehood.

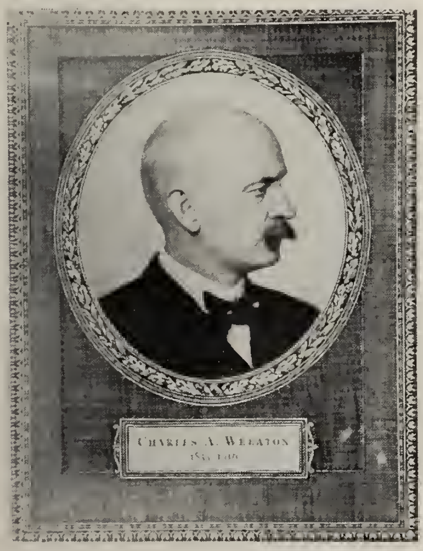

Fig. 2. Dr. Charles A. Wheaton (1853-1916), professor of surgery from 1897 to 1901

For many years the medical school bulletin listed separate faculties and curricula for the medical college and the college of homeopathy, even though many of the textbooks and assigned readings were the same. Finally, the bulletin for the school year 1909-10 announced that inasmuch as only 3 students (2 juniors and 1 senior) had registered for courses in homeopathy, the Board of Regents had resolved to make no further distinctions in the curricula.[9] However, 2 salaried professors with a background in homeopathy were continued on the staff to teach materia medica and homeopathic therapeutics. Subsequent issues of the bulletin contain no memoranda on homeopathy, and in his report to president Vincent (1911-12), Dean Wesbrook states that the College of Homeopathic Medicine and Surgery was abolished in 1910.[11]

Wheaton succeeded Millard as professor of surgery (1897-1901). Perry Millard, dean and professor of surgery, was the faculty's acknowledged leader until his death in February 1897, when H. M. Bracken became acting dean. The same year, Dr. Parks Ritchie, also professor of obstetrics, was selected by the Board of Regents as dean, a position he held until 1906, when he was succeeded by Wesbrook. Dr. Justus Ohage was appointed professor of clinical surgery in 1897. He had performed the first successful cholecystectomy in America, at St. Joseph's Hospital in St. Paul (1886).

Charles A. Wheaton of St. Paul was identified with the Department of Surgery from its beginnings, and, when Millard died, his title was changed from professor of clinical surgery to professor.[10,12,13] Wheaton was recognized by his colleagues as a surgeon of unusual competence. A member of the American Surgical Association, he had come to Minnesota from Harvard. He directed the destinies of the department for only a few years, for the *University of Minnesota Bulletin* for 1902 lists him as professor emeritus. The obituary notices (1916) suggest that Wheaton must have been a warm and friendly colleague, universally respected, a surgeon one would like to have known. His contributions and legacy were essentially to his own generation and time, for he left no writings to reflect the genius for which he was so greatly appreciated and admired by his contemporaries. Both Drs. Wheaton and Moore loved books and were keen students of surgical literature. They left their collections of medical books to the university—monographs which have nourished and delighted many a student of surgery in this institution over the past four decades.

Dunn succeeds Wheaton as professor of surgery (1901-1904). A memorandum in the minutes of the Board of Regents of the university for June 4, 1894,[10] may be interpreted to suggest that Wheaton may have had some dissatisfactions over the matter of partition of curricular responsibilities. In any case, Wheaton resigned some of his didactic responsibilities, which were assumed by Dr. Millard, who also was dean. Again in May 1899, a memorandum in the minutes of a meeting of the Executive Committee of the medical college[13] indicates that Wheaton wished to resign his professorship. On June 10, 1901, the regents accepted Wheaton's resignation, and he was named professor emeritus. Only in October 1901 did approval of Wheaton's resignation appear in the minutes of the Executive Committee of the department. Therefore, it must have been common practice for members of the faculty to communicate directly with the Board of Regents. The minutes of a regents' meeting for April 4, 1901, lists approval of a change of title for Dunn to professor of surgery.

In a long letter dated February 25, 1901, addressed to J. Clark Stewart, then professor of surgical pathology in the department, Dunn writes as chairman of a committee of the department and discusses the matter of responsibility for curricular assignments: "I positively declined to be a candidate for a co-ordinate Professorship two years ago. For no other reason whatever, I would not attempt to serve in such an indefinite capacity with my own brother." The letter then goes on to discuss, assess, and analyze the division of the curriculum in a careful and thoughtful manner. Beneath Dunn's signature appear the signatures of C. A. Wheaton, F. A. Dunsmoor, James E. Moore, and J. Clark Stewart, approving the content of Dunn's letter. It is quite obvious, therefore, that Dunn had won the mantle and had come by the responsibility for partition of curricular assignments even though he was not titular head of the department until official acceptance of Wheaton's resignation by the Board of Regents in June 1901. Whenever there were important departmental problems to be resolved, Dunsmoor was pressed into committee service for the purpose, probably at the suggestion of some member of the Board of Regents.

Dunn's letter to Stewart suggests very definitely he was a person of strong and positive opinions who took his responsibilities seriously. When Dunn died unexpectedly in June 1904, while in attendance at a meeting in St. Louis of the American Surgical Association, of which he was a fellow, Moore was named professor. In May 1899, when Wheaton had indicated a desire to resign, recommendation of partition of professional duties between Dunn and Moore appears in the minutes of a meeting of the Executive Committee of the department. It was this circumstance, apparently, that provoked Dunn's ire, reflected in his letter to Stewart. The obituary notices of 1904 indicate that Dunn was a superior surgeon and a warm colleague.

ORIGINAL UNIVERSITY CAMPUS MEDICAL SCHOOL COMPLEX

The first medical school building (1888) stood at the corner of Sixth Street and Ninth Avenue South, across the street from the original St. Barnabas Hospital.[9,14] In 1891, the legislature appropriated $80,000 for the erection and equipment of suitable buildings on the university campus and in the fall of 1892, Medical Hall (now Wulling Hall) was formally dedicated. On that occasion William Osler gave his famous address on teacher and student.

In 1893 the medical chemistry building was completed; its west end was used for chemical laboratory purposes and the east end for the teaching of histology, bacteriology, and pathol-

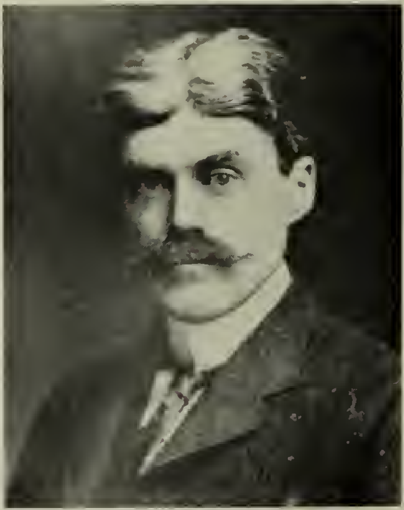

Fig. 3. Dr. James A. Dunn (1853-1904), professor of surgery from 1901 to 1904

ogy. The building became a general storehouse after 1912 and was razed in 1924.[15] The legislature of 1895 appropriated $40,000 for a laboratory of medical sciences, which became available in 1896. This building, known as Wesbrook Hall since 1932, provided space for histology, physiology, pathology, and bacteriology. The anatomy building, constructed in 1900, burned in 1910; on its foundation, the pharmacy greenhouse was later built. The last medical construction in the old complex was the public health and pathology building (1907). I took a course in bacteriology there in 1917 to determine whether I could be happy to follow medicine as a career.

These buildings were said to be magnificent for their time and they provided space for clinical, didactic, and laboratory work. The entrance requirements were raised and the number of studies was increased, as was the time devoted to primary and fundamental sciences.

ORIGINS OF OUR PRESENT HOSPITAL COMPLEX

The original medical school complex on the west side of Washington Avenue had no hospital facility.[14, 16-18] For many years the clinical staff did its work and teaching in voluntary hospitals of the Twin City area and at Ancker and Minneapolis General hospitals.

The initial gift ($113,000) toward the first unit of our present hospital complex came from the estate of Dr. and Mrs. A. F. Elliot. When the dedication ceremony took place (September 5, 1911), these moneys had grown to $120,000. The legislature appropriated $140,000 and the citizens donated an additional $42,000. Following the address of welcome by Dean Frank Fairchild Wesbrook, Dr. James E. Moore, professor of surgery and chairman of the Minnesota Hospitals Committee, related the story of the hospital movement. He told how the late Gov. J. S. Pillsbury had persuaded the legislature to appropriate $15,000 at an earlier date to purchase land in the area of "Seven Corners." Here a dispensary had been built to serve the school as an outpatient clinic until completion of a similar service in the basement of Millard Hall.

The enthusiastic response of citizens to the hospital project encouraged the Alumni Association of the university to bring its influence to bear for a greater medical campus, and the legislature consequently appropriated $460,000. Two years later the succeeding legislature appropriated an additional $350,000 for the purchase of more land, providing space for the eventual development of a medical school campus and hospital complex.

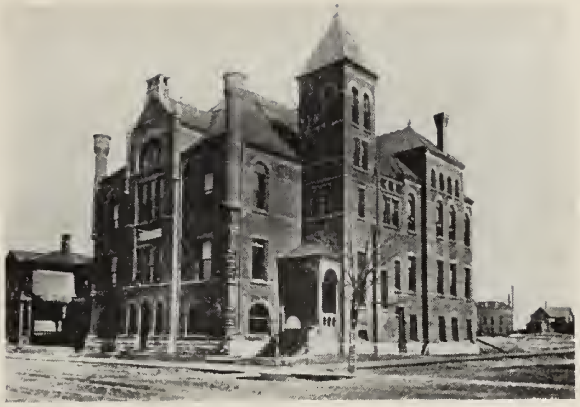

Fig. 4. Medical Hall (now Wulling Hall), dedicated in 1892

THE MEDICAL SCHOOL'S NEW SETTING

Elliot Hospital (1911), with 120 beds, was the first medical building on the east side of Washington Avenue. Its capacity was enlarged to 192 beds by an attached service building in 1915, provided by a $50,000 legislative appropriation. In the years immediately preceding occupation of the Elliot Hospital, a number of dwellings in the vicinity of Union and Delaware streets and Washington Avenue were used for hospital facilities, under what must have been trying circumstances.

It may be of some interest to know that in his report to Dean Wesbrook (1911-12), Dr. L. B. Baldwin, hospital superintendent, gave the hospital per diem as $2.16![11] Those were the days of rigid economies, well known to all participants of that era. It should be said, however, that Baldwin was as famous for his rigidly enforced economies as Ray Amberg, our present hospital director, is for his resourcefulness and spirit of liberality in meeting the needs and demands of the staff.

The institute of anatomy, known as Jackson Hall since 1954, went up in 1912, as did Millard Hall. Successively, the following units have been added: Todd Memorial Hospital, 1924; the George Chase Christian wing, 1925; Eustis Hospital, 1928; Outpatient Clinic, 1928; health service, 1929; medical science building, including the School of Dentistry (known as Owre Hall since 1950), 1932; Psychopathic Hospital (on roofs of Todd and Christian wings), 1936; new students' health service, 1950; Variety Club Heart Hospital, 1951; Lyon Laboratories, 1954; conversion of residence at 305 Union and Old Baltimore lunch room at 508 Washington Avenue as surgical research laboratory, 1958; Masonic Hospital, 1959; Veterans of Foreign Wars Research Laboratories, 1959; clinical research

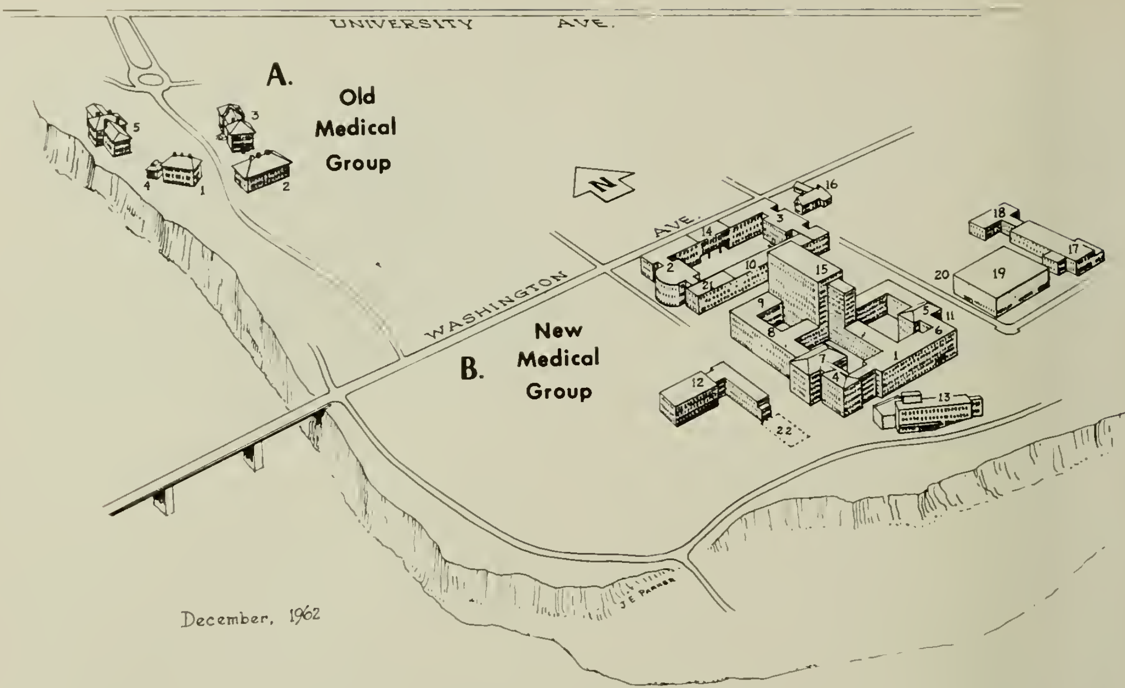

Fig. 5. Original and present medical school complex. (A) Old medical school complex west and north of Washington Avenue: (1) Medical Hall (1892), now Wulling Hall; (2) medical chemistry building (1893), razed in 1924; (3) medical sciences laboratory (1896), now Wesbrook Hall; (4) anatomy building (1900), now the pharmacy greenhouse; and (5) public health and pathology building (1907), now part of the psychology building.

(B) New medical group east and south of Washington Avenue: (1) Elliot Hospital (1911); (2) institute of anatomy (1912), now Jackson Hall; (3) Millard Hall (1912); (4) Elliot Hospital service building (1915); (5) Todd Hospital (1924); (6) George Chase Christian wing of hospital (1925); (7) Eustis Hospital (1928); (8) Outpatient Clinic (1928); (9) Old health service (1929); (10) medical sciences (1932), now Owre Hall; (11) Psychopathic Hospital (1936); (12) new students' health clinic (1950); (13) Variety Club Heart Hospital (1951); (14) Lyon Laboratories (1954); (15) Mayo Hospital, clinical research laboratories (1954); (16) surgical research laboratories (1958); (17) Masonic Cancer Hospital (1958); (18) Veterans of Foreign Wars cancer research laboratories (1959); (19) and (20) medical library and clinical research facilities (1961), now Diehl Hall; (21) Jackson-Owre addition to anatomy and medical science building (1961); and (22) children's rehabilitation center (unfinished).

laboratories and medical library, known as Diehl Hall, 1960; and Jackson-Owre addition to medical science building and Jackson Hall, 1961, to be known as the Bell-Brekhus units.

In all there are now 21 units, including the initial Elliot Hospital (1911) and the hospital service building (1915), in the new medical school complex on the east side of Washington Avenue.[15] Toward this accomplishment generous contributions have come from local citizens and from many local and national organizations, the U. S. Public Health Service, and the citizens of Minnesota through its legislature. In the immediate post-World War II period, several temporary buildings served to meet the needs of a larger staff necessary to deal with an enlarged undergraduate and graduate student body.

The total cost of the construction of the old medical school complex west of Washington Avenue was $438,732.46, of which $386,729.33 (88 per cent) was provided by special state appropriations. The total cost of the buildings in the present medical school complex is $27,763,197.52, of which amount $12,437,711.28 (44.8 per cent) came from special state appropriations. The federal government's contribution was $6,351,216.30, most of which came to us over the past dozen years, which moneys were matched by gifts.

SURGICAL READING ASSIGNMENTS SEVENTY-FIVE YEARS AGO

The books listed in the bulletin[9] for reading by the surgical faculty in the beginnings of our medical school made a formidable list: Agnew, Billroth, Bryant, Erichsen, Gouley, Gross, Holmes, Smith, Van Buren, and Keys. Those tomes were as large as the texts of our day; in fact, some were two-volume affairs. It is difficult to believe that even students most interested in surgery consulted all these books. Much of the present knowledge of surgery had not yet come into being. Fifty and seventy-five years hence, students may justifiably ask: "What defense had teachers of surgery in 1963 for asking undergraduates to digest such large texts containing much we know now not to be true?"

When our school was founded, the student had ample time for textbooks, since *Annals of Surgery* was the only general surgical journal in the English language. More and more students, as well as teachers, are learning that journals mirror far more intimately the ferment of the moving scene than do textbooks, which conventionally reflect accepted opinions and practice of three to five years ago.

EARLY, STRONG APPOINTMENTS RESPONSIBLE FOR INITIAL GROWTH

The beginnings of this medical school go back a long way and represent the efforts of a number of persons who have had a strong and helpful hand in guiding its development. My own personal recollection of the school dates back only to 1918 when I became a freshman medical student. By that time, the pattern and direction of the school, certainly for the preclinical years, already had been well delineated.

Under Vincent, the real founder of the university as we know it today, a true university graduate school developed with Dean Guy Stanton Ford at the helm. To the medical school Vincent brought Dean E. P. Lyon, under whom a strong faculty in the preclinical sciences came into evidence. The Department of Anatomy, under C. M. Jackson, developed men like Scammon, Johnston, Rasmussen, and Downey. Lee, the embryologist, was already on the scene. From that nucleus of men the vigor of research extended gradually to other areas of the school. Dr. E. T. Bell, initially a member of the Department of Anatomy, influenced the development of the school through the creation of a strong teaching function, much admired and appreciated by an entire generation of medical students. From relative obscurity, the medical school, in one generation, with liberal support from the peoples of Minnesota and the central administration of the university, has grown to its present strong position amongst medical schools.

Formulation of administrative lines in the medical school within departments was adopted following recommendations of the Committee on Reorganization of Medical Instruction in February 1913.[19] The committee also recommended the change of name from College of Medicine and Surgery to Medical School. President Vincent apparently found the technics of administration of his predecessor, President Northrup, a bit difficult.[20,21] Whether apocryphal or not, it has been said that Northrup, who used the wastebasket as his filing cabinet, ran the university with a half-time secretary!* In any case, recognition of heads within departments must have helped intradepartmental administration and fixation of responsibility with establishment of normal channels of communication through the dean's office to the central administration of the university.

CREATION OF THE MAYO FOUNDATION

The bitter opposition to the Mayo affiliation with the graduate school can scarcely be appreciated today by those who were not spectators of the 1914-17 controversy.[22] In the university, President Vincent, Dean E. P. Lyon, and Dr. James E. Moore were the moving spirits who fostered its development. Guy Stanton Ford speaks of the persuasiveness of Will Mayo's eloquent Lost Oration at the legislative session of 1917 which made the alliance a reality. Smoldering elements of opposition, however, continued certainly for more than a decade. At a dinner meeting of the Gridiron Club in a downtown hotel in Minneapolis in the mid-twenties, I heard Dr. Soren P. Rees, well-known opponent of the affiliation, get up to denounce it once again and to speak his mind upon the matter. When he had unburdened himself, Dr. Will Mayo, seated a few places away from Rees, leaned over to say, "Soren, I have never heard you say it better," an incident which tells much of the genius of Will Mayo.

Establishment of the Mayo Foundation within the Graduate School of the University of Minnesota (1917) has come to have great meaning for graduate training, not alone on this campus but also at the Mayo Clinic in Rochester. For more than sixty years, the Mayo Clinic has enjoyed a dominant influence in medicine the world over. Surgeons especially, and their patients too, have been greatly influenced in their selection of therapeutic procedure by current practice at the Mayo Clinic. From one end of the country to the other, products of the Mayo school of training today reflect the Mayo attitudes and practices.

Will Mayo recognized that the wells of knowledge can only be filled through the agency of research. Before consummation of the graduate school affiliation, he had brought Frank Mann to Rochester. And what a ferment Mann created there! While we mourn the recent loss of that great leader, who influenced men and thinking far beyond our shores, we need to acknowledge the leadership and vision of Will Mayo, who had the discernment to start an important experimental activity in a clinic whose primary concern was the practice of medicine.

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*Dr. Donald J. Cowling told me recently he had heard this directly from President Northrup himself.

There are only too few Frank Manns, Leonard Rowntrees, Charles Codes, and Earl Woods in any faculty. Men of this type create schools about themselves. They must be vouchsafed the opportunity of training men to continue in their tradition if they are to weld lasting repercussive effects in the academic arena.

The genius of the Mayo brothers was reflected in the creation and integration of a great teaching and training enterprise as a corollary of an extraordinary clinical service function, cushioned by an imposing and extensive research program. The Mayo influence, as arbiter of acceptable practice in medicine and surgery, has yet to be felt in the same measure in our academic halls. The fiftieth anniversary of affiliation with the Graduate School of the University of Minnesota is near at hand. As the second half of the century of alliance approaches, the Mayo directors, in keeping with the trend of the times, will undoubtedly face the future with a view to garnering more academic laurels.

James E. Moore, Surgery Department chairman (1904-1918). James E. Moore succeeded Dunn as professor of surgery in 1904.[10,13,23] Dr. Moore was essentially the builder of the department. He was one of the keen proponents of the Mayo affiliation. He was the leader in formulating and instituting proposals for graduate study and degrees in the clinical fields, which added strength and growing power to the school.

Moore took great pride in this accomplishment, believing that teachers of surgery would emerge therefrom. However, the only escalator to a position on the staff was through the outpatient clinic, usually a long and arduous process of waiting until someone on the inpatient staff retired from the scene.

Unlike his predecessors, Moore wrote a large number of papers. He was responsible for pointing out that suppurative arthritis of the hip joint usually had its origin in osteomyelitis of the neck of the femur. Many a young surgical house officer using the Moore gallbladder spoon probably fails to realize that it traces back to our Dr. Moore.

Arthur C. Strachauer, chairman, Department of Surgery (1918-1930). Arthur C. Strachauer was made acting chief following Moore's death from pernicious anemia in 1918 and became chairman of the department in 1920. Strachauer continued to support Moore's keen interest in the graduate school training program. Throughout his years as chairman, Strachauer was an ardent advocate of opportunities and operative privileges for the surgical fellows, a thesis not implemented then as readily as now in university clinics.

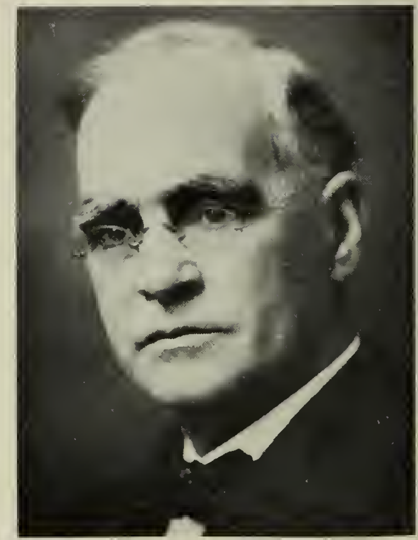
Fig. 6. Dr. James E. Moore (1852-1918), professor of surgery from 1904 to 1918 and chairman, Department of Surgery, from 1913 to 1918

THE UNIVERSITY HOSPITAL SURGICAL STAFF IN MY STUDENT DAYS

The Department of Surgery already had extensive research laboratories in my student days on the second and fourth floors of Millard Hall, used successively by Drs. J. F. Corbett, Conrad Jacobson, Angus Cameron, and Arthur Zierold. The laboratories did not come into daily use, however, until the mid-twenties. When I returned from a year's sojourn abroad in September 1928, I found that the spreading influence of other departments had annexed our space on the second floor of Millard Hall. The influence of research, however, had not yet permeated the texture of undergraduate teaching in the same measure as today.

Besides Dr. Strachauer, the other full professors of that era were Drs. Arthur Gillette and Charles H. Mayo. The associate professors were Colvin, Corbett, Geist, Griffith (dental extractionist), Law, MacLaren, Mann, H. P. Ritchie, Rogers, and Wright. This colorful array of professional talent, most of whom we came to know very well, were the leaders of surgery in the community.

Ward rounds at the University Hospital on

Dr. Arthur C. Strachauer (1883-1951) associate professor and acting chairman 1918-1920, chairman and professor of surgery 1920-1930

Saturday morning were a sort of marathon,[24] with an occasional stop at a bedside, where some member of the staff expressed an interest in a patient. As one looks back now, one can appreciate that contact between staff and patient was quite casual, as adjudged in the light of the full-time plan by which the surgeon has an adequate opportunity to know his patient well before operation. Moreover, Saturday morning rounds were a means of selecting patients to be operated upon by the several members of the staff the following week.

The surgeons of my day taught in formal lectures, usually from outline notes probably annotated at long intervals, some of which obviously were in great need of being brought up to date. Our teachers, more addicted to books than to journals, were busily preoccupied with private practice and came to the school to lecture or to operate. They were, however, a distinguished group of men, genuinely admired and respected by the students. George Dunn and Roscoe Webb, both graduates of Johns Hopkins, helped institute clerkship teaching in 1919. Of the surgical teachers of my student days, only a few survive—James Johnson, Wallace Cole, Carl Chatterton, and Walter Fansler, all of whom gave long years of faithful service to the university and continue still in active practice.

After two years in medicine, I had decided to become an internist. However, the more fascinating and colorful lectures of the surgeons, which sessions I began auditing in my junior year, persuaded me that here was a more interesting life, and so the decision was readily made.

HOW I CAME TO DIRECT THE ACTIVITIES OF THE DEPARTMENT OF SURGERY

A notation from the minutes of the Administrative Committee of December 13, 1926, with Dean Lyon and Drs. C. M. Jackson, J. C. Litzenberg, and F. W. Schlutz present, suggests I was picked to head the Department of Surgery, after the professorship had been declined by both Francis Newton of Harvard and the late Mont Reid, who left Johns Hopkins for a post at the University of Cincinnati. However, on this score, I must confess that no overtures were made which could even optimistically have been interpreted by me other than that a full-time position would be waiting on my return from a European study period which Dean Lyon urged me to make. By this time (1927), I welcomed the opportunity for foreign study. A year spent on the wards of our University Hospital with Dr. George Fahr had stimulated my admiration and desire for a more intimate acquaintance with European scholarship. My great luck in succeeding to the chair of surgery in January 1930 was owing not only to the endorsement of Dean Lyon's Search Committee but, in large measure, to the generosity of my preceptor and predecessor, Dr. Arthur C. Strachauer, who resigned in 1925 but kindly offered to hold the reins until a successor was found.

During my year's sojourn abroad, the university supplied me with a basic stipend of $200 a month, which was probably liberally interpreted as a sabbatical, the only one I have taken advantage of these many years. It was a delightful and profitable experience.[25] A period of foreign study is no longer, however, the compelling necessity it was once considered to be for those proposing to follow an academic career. However, it is while buoyed up by the enthusiasm of youth that visits to the clinics and laboratories of well-known men prove most rewarding.

Such, in brief, is the story of the early days of our medical school and its Department of Surgery. It is difficult to write knowledgeably of the men of this period, for little information has come down to us concerning the participants. One cannot read of the multiple facets concerned in the genesis of the medical school, however, without recognizing the sense of dedication and the great interest of the founders in creating a representative school with a strong staff.

It has been my great privilege to have had a hand in directing the activities of the school's Department of Surgery for thirty-three years, as long, in fact, as the last four of my five predecessors in the chair of surgery. Over these years, the department and its surgical specialty divisions have grown apace. The men who, by dint of their own labors and imagination, have grown to significant academic stature represent the most important and effective work of the department. Whatever success has been achieved during my tenure is owing in large measure to strong and tangible, as well as intangible, support given the over-all enterprise by the citizens of the state, our legislators, the Board of Regents, a wonderful succession of university presidents (Drs. Coffman, Ford, Coffey, Morrill, and Wilson), and three discerning medical school deans (Lyon, Diehl, and Howard)—all with a spirit of selfless and dedicated devotion to the best interests of the school, the university, the profession, and the community.

The Department of Surgery has a large and loyal part-time staff, which, in earlier years, was the very backbone of the enterprise. Today, this segment of the staff is concerned more with occasional lectures and participation in the teaching programs of our affiliated hospitals (Ancker, Minneapolis General, Mount Sinai, and Veterans). The contribution of all these units and their staffs to the success of the over-all effort has been and continues to be very important.

This recital records only a few of the salient occurrences reflecting light on our school's beginnings and its Department of Surgery. Both Millard and Moore obviously played significant roles in the development of the school as well as the Department of Surgery. Some intimations of the department's activities in more recent years are reflected in the accompanying papers of my distinguished colleagues, who have been the chief actors in our enterprise and from whose work has come the pabulum which has infused itself into the literature of surgery. My role has been essentially that of side-line cheer-leader and regimental water carrier, with a view to creating an atmosphere friendly to the acquisition of learning. It is in order, therefore, to recount here a few of the pedagogic and philosophic precepts which have served as guide lines during my privileged years as leader of the band.

PART II

THE FUNCTION OF A UNIVERSITY AND ITS PROFESSIONAL COLLEGES

Every university stands in continuing need of good teachers. However, this is not enough. It must have *great* teachers who inspire their students to reach beyond current horizons. While professional colleges must accept the heavy and continuing responsibility of training competent representative men and women to deliver a superior brand of service, they also must provide the opportunity and the stimulus for the development of scholars and teachers.

It is the function of a great university to contribute intellectual leaders to the ferment of its time. The university is, in fact, the nursery of the future in the men and women it trains and in the outlook it develops in them. The achievement or distinction of a university can be assessed, in part, by the measure to which its graduates have contributed to the life of community, state, nation, and the world in the arts, business, literature, philosophy, politics, the professions, and the sciences.

Our state universities have grown large to afford their sons and daughters opportunities to equip themselves for life's work and problems. Ezra Cornell's definition of a university as "an institution in which any person can find instruction in any study" has come to be their symbol. Professional schools and colleges have become an integral part of most universities. Labels of size and quantity, however, must not come to be accepted as a satisfactory substitute for that indispensable attribute of every successful educational enterprise—quality.

It is one of the responsibilities of scholarship in professional colleges to challenge experience and accepted practices. It should be the special function and purpose of universities to strive to say the first word rather than the last. Any administrative officer who assesses the functions of the teacher as primarily those of the school master is wreaking havoc with the real function of a university in achieving distinction in the men and women who pass through its portals. And the teacher who dismisses or shrugs off research as being of no importance or interest to students enfeebles the educative process.

Dedicated motivation is the student's best and most powerful ally. Each father desires a training superior to his own for his sons and daughters. The opportunities for a first-class education certainly are better today than in our father's or grandfather's time and the competition also is keener. If the fiber of the child is tough and if he applies himself with the interest and determination of his parents, he should do far better than they. If every succeeding generation struggles to get beyond their parents' and grandparents' educational training and point of origin, we shall become a stronger nation and race. However, as everyone knows, the world offers many diversions and alternatives to distract the runner in life's race, too often persuading participants that the contest between the hare and the tortoise is only a fable.

Arousing the student's interest. Criticism against the Department of Surgery for not pursuing a more systematic plan of teaching periodically has been leveled by both students and faculty members. Perhaps our methods are somewhat unorthodox, yet, in the National Boards, the performance of our undergraduate medical students as a group in the examinations in surgery regularly has been amongst the best in our school and, more often, the highest turned in by students in any of the clinical disciplines.

My own feeling through the years has been that there is no special virtue in trying to "cover the waterfront" by a systematic plan. The breadth of most clinical disciplines today is such that no one can teach or absorb it all. Thirty-five years ago it was possible for an earnest graduate student to embrace the entire current literature of any clinical field by spending three to four hours in the library once a week. Today, if an equally motivated graduate student in surgery were to read every waking moment, it would be manifestly impossible for him to encompass the literature. As in earlier times, much of the moving scene taught today will quickly become obsolescent and should not absorb the student's attention to the exclusion of matters of great historical importance which have survived the wreck and rust of time. Much in any discipline can be written on a single page of history. Separation of the wheat from the chaff can only be accomplished by familiarizing the student with the origins of contemporary thought. The orientation afforded by a judicious appraisal of present knowledge against the background of time must not be underrated. What greater stimulus to the imagination is there than an acquaintance with the past, which is the history of men and ideas?

It is very important, I believe, to expose the student to men teaching from a fullness of their subject, declaiming with enthusiasm upon the themes they know the best. The opportunity to hear Wallace Cole, Logan Leven, Richard Varco, Walton Lillehei, Donald Creevy, Lyle French, John Moe, Claude Hitchcock, William Kelly, Yoshio Sako, Fletcher Miller, Joe Aust, John Perry, Albert Sullivan, Richard Lillehei, Ed Humphrey, and many others, in a few lectures at their best, discussing experiences in those areas in which they are acknowledged leaders, must be a refreshing and stimulating experience for the student, who, whether listening to them or to Drs. Visscher, Armstrong, Barnum, Lazarow, Watson, Spink, Good, and other great teachers within the school, will say to himself: "That is the kind of person I would like to be." Those things were said amongst the students of my day; I assume students today are not far different. When the stimulating contagion of a consuming interest overtakes the student, boredom, floundering, and inertia are supplanted by enthusiasm, growth, maturity, and vision.

Emerson has told somewhere the story of his fruitless efforts to get a calf into a barn. The maid, noticing his unsuccessful struggles, went to his assistance. The calf, when offered a finger to suck, followed eagerly. Students are to be enticed, not driven, into the Elysian fields of scholarship, where the pursuit of knowledge can become an absorbing, engaging, pleasant, and soul-satisfying occupation as well as pastime.

Unfortunately for students and teachers, there is no longer an opportunity for continued, frequent direct contact between senior members of the faculty and the large student body. Such contacts have to be maintained largely through the mass medium of lectures, conferences, and seminars or sought by the students for special reasons. One of the functions of the teacher is to reveal something of himself beyond his professional competence and knowledge—to reflect his outlook, motivations, and attitudes toward life and his profession.

The compensations of the teacher are great. To be privileged to make indelible imprints upon alert, impressionable, and responsive minds, to enlarge the vision or recreate the thinking of others—these are sources of abiding satisfaction.

In pursuing an education, it must be remembered that students receive their training at the hands of men, not curricula. Moreover, it is important to leave teachers to their own devices. Success lies not in the program but in the men who energize it. The most famous sequence of teacher-to-pupil influence the world has known is represented in the succession of Socrates, Plato, and Aristotle, each celebrated and immortal in his own right and each employing a technic distinctly his own, lending differing emphasis to similar and dissimilar subject matter.

Man's greatest creativity is in his formative years, but, with the growing complexity of the medical curriculum, important discoveries by medical students are becoming increasingly infrequent. This is not for want of imagination but rather because of rapt absorption in acquiring knowledge in succeeding disciplines, most of which are taught with emphasis upon what is known to the exclusion of what is not known. If we are to lend greater impetus to original research and discovery in medicine and to encourage a freer range amongst inquisitive young minds, we need to de-emphasize the didactic technics which have proved so sterile and have more frequent recourse to the Socratic method by which the student becomes his own teacher.

We in medicine, more than any other professional groups or teachers, have the unique opportunity to instruct while we point the way to important and satisfying rewards. It is the special privilege of all in the medical profession to work for causes more important than ourselves. We must not accept these unusual and matchless opportunities and sources of happiness without thanksgiving. Such satisfactions are all the greater when they come as rewards in which neither private gain nor advantage was sought or won.

Reappraisal of professional counseling. Four decades or more ago in this university, as probably in others, there were oracular spirits who, with great confidence in their capacity for divination, would presume to advise students on how to face life's problems and what courses to pursue. Had I had more faith in such self-appointed oracles and less in myself, the great opportunities of medicine would have been denied me. These omniscient spirits have been less in evidence and not so articulate since the rise of professional counselors, a trend which has seeped into the fabric of all universities and colleges.

Somewhat more than thirty years ago, as a guest on Will Mayo's North Star, on a beautiful afternoon in October, drifting down the Mississippi River toward La Crosse, I had an opportunity to discuss the matter of counseling with Dean J. B. Johnston, a man of great discernment. A famous neuroanatomist and later dean of the College of Science, Literature, and the Arts, Johnston had much to do with the origins of technics of appraisal of the ability and promise of students. He was quite ready to admit the inadequacies and inefficiences of such examinations, recognizing how interest, once lacking, presently may consume the young student. What an important difference the captivation of an absorbing interest makes! It recreates the man, increasing his stature while enlarging his vision. Examinations which affect to appraise a student's ability fail to measure or reflect accurately the influence and vital importance of interest.

In the field of professional counseling, a careful examination of its accomplishments is definitely in order. I see many students who have been badly counseled by persons without adequate knowledge or orientation in the field in which they are offering advice. An individual with an attentive ear attached to his cranium, with a sympathetic mind and understanding heart, wise in the ways of the world and in the field upon which he offers advice—such a person is a far better counselor than the psychologist or sociologist who so blithely, with the aid of a few examinations, presumes to advise the examinee what course in life to take. I would rather be advised by a J. B. Johnston than by outgrowths of the examinations which he devised to determine a man's qualifications for certain enterprises. Of course, Dean Johnston's examination, or replications thereof, can be given to several hundred students at once. But if counseling is important, should it not be done with care and discretion? This educational sin of this era stands in great need of correction, which can come only when schools, colleges, and universities find men in their faculties with compassion in their hearts and a capacity to discern glimpses of interest, greatness, and vision in a young student's mind and heart.

Dean Nicholson of the College of Science, Literature, and the Arts, of my undergraduate days, whom one consulted generally when punitive measures were to be invoked, impressed me as a person who went beyond the range of the computer. One of his technics employed the hypothetical kick to the metaphorical seat of the pants to stir up resentment in the student against badly expressed judgments by his teachers. Dean Lyon's approach was gentler but certainly as effective. His analysis went directly to the core of the problem. Without affecting to provide answers, he would, in turn, ask of the inquirer rhetorical and leading questions which the person seeking advice could only answer satisfactorily after pondering their significance.

We must have a rebirth of competent, interested, and professional counseling within our respective schools on an individual and personal basis. The policy of the professor's open door must be reinstituted if the art of counseling is to lend students the help they need and seek.

DEPARTMENTAL ORGANIZATION

Perhaps few, if any, departments in this university or medical school are as much decentralized as is its Department of Surgery.[26–28] My thought has been that the power of appointment is the only authority one needs to guide the destinies of any venture. My judgments of whom to elevate to departmental responsibility have been influenced and decided largely by considerations of the available person's motivations, competence, interest in research and teaching, and likely contribution to the over-all enterprise. Emotional stability is an important item. Persons of great promise but emotionally immature are rarely capable of sustained consecutiveness so important to the success of any endeavor. If one will select a good man, make him autonomous, and not interfere, the enterprise is bound to succeed.

If a department is large, as this one has come to be, channels of communication are not as firm and fast as those in a military chain of command, so much admired by those who follow Pope in believing that "Order is Heav'n's first Law." Good men, I feel strongly, can be trusted and must be left alone to work out their own salvation. A far more useful function is served, I am very certain, if the director of an enterprise abstains from trying to adjudicate or "quarterback" every decision. I saw the stultifying influence of this practice in many German surgical clinics thirty-five years ago. It is a tragic and emasculating influence. Prussianistic traces of "heel-clicking" were still in evidence in some German surgical clinics on my last visit there in 1959.

Any teacher who fails to recognize that in some respect a large number of the trainees in his organization acquire skills or knowledge which make them his master is not alert to the potential power of the educative process. The professor's most important role, I have come to feel, is to create or help synthesize an atmosphere in which learning becomes an absorbing, engaging, and fascinating adventure and experience. In such a receptive environment, industry and scholarship thrive, bringing out latent talents and the finest quality in men. This is the first lesson of the educator. The men and the proliferation of ideas emerging and generated in such a milieu will prove to be the professor's greatest discovery.

In defense of young men. Impatience is not alone a defect of young men. It may be observed too in one's elders and is reflected by committees. It is best to meet impatience with patience. Sometimes a young man needs to have friends rise to his defense, an occurrence which I found very reassuring and helpful during my early years in this department, when a little sniping from without was condoned and encouraged from within. Survival from such trials makes one appreciate more the loyalty and support of his friends as well as the importance of opportunity. My experience on this score has made me more patient with manifestations of impatience and anxious to repay in service my great debt for the many unexcelled and unique advantages a great university has to offer and for a continuing and wonderful opportunity.

Several years ago, Dean Diehl called me one afternoon to inquire whether I was free to come to his office to consider a matter which had come up for discussion and which concerned a facet of the operation of my department. Dean Diehl's visitors, I soon learned, entertained some strenuous objections to an appointment which I had urged and which Dean Diehl had approved. After listening to a recounting of the foibles of my recent appointee, I inquired of the group who had come to lay their problem before the dean: "Is it the young man's scalp you want?" After some faltering hesitation on the part of the Dean's visiting committee, I was told, "Yes, to put it bluntly, that is why we are here." I replied, "You may have your wish but be prepared to get my scalp first." My plea was: "Give this young man six months and I can assure you, you too will then sing his praises." And so it proved. Today that young man is a professor in the faculty of one of the most distinguished universities of this country and a leader among surgeons—not alone in his department but in the community.

Facing up to criticism. Criticism we cannot escape, nor should we. To be heeded, it must be well-intentioned and responsible. In facing up to criticism, I believe, there are two correctives: patience and selfless dedication. These two can overcome any reasonable criticism which is not obstructive. To the occasional member of my department venting his spleen or invective upon its activities, I always write or say, "knowing you to be a responsible member of this Department and how much you value your appointment and your association with the University, I know you would not offer any other than constructive criticism." It has been astounding how this simple statement has sufficed to silence critics who had no constructive suggestions to make.

Defeat can have its bright side. Every year each of us fights a thousand battles. The entire future and success of our enterprise, we may feel, depends upon winning the objective in three or four of these contests. Yet, even some of these vital skirmishes we lose.

None of us can find much consolation in defeat. Yet, time not infrequently suggests there may have been gain in the loss. In life's struggle, loss of battles is common experience. It is, however, no reason for losing heart or abandoning an important cause. When after more than a year's continual application in many echelons of the university, the cause of placement of Mount Sinai Hospital on the campus was lost in 1949, little solace was to be found in the comforting words of the chairman of the Board of Regents, Fred B. Synder, and President J. L. Morrill. Yet their revealing statements that no one previously had come to the regents to indicate the great need of the medical school for enlargement of its hospital facilities proved ultimately to be the harbinger of better news.

Representations then made to the Board of Regents set the stage and created the atmosphere both within the university and later in the legislature to implement an earlier suggestion of former Governor Harold Stassen to build an appropriate memorial on the medical school campus for the Mayo brothers. Even a disappointment, which at the moment appears tragic, may prove to have a silver lining.

Opportunity, the real paymaster of the academic surgeon. Freedom from the strictures of society is a fool's dream. The physician in practice and the clinician in academic circles cannot deny or gainsay the inviolable rules of the game. The academician who fails to count opportunity as the best of paymasters is not alert to the great good fortune which may be his if he will only seize it.[29,30] Nowhere in the entire range of medicine are there better opportunities for the man who has aspirations for employment of his creative talents than in the clinics of our medical schools today. The full-time clinician who becomes so immersed in the routine of the day and preoccupied with practice to the neglect of the opportunity of making a contribution to the patrimony of knowledge is denying himself one of the richest sources of pleasure and contentment in life—the opportunity for creative work. The sources of a man's satisfactions reflect very directly his motivations.

The "Happy Warrior," observed Wordsworth, is he who throughout the tasks of life abides by the high resolves of youth, guided by an inner light, and is not to be swerved from the path of his best intentions and finest endeavors, no matter how enticing the beckoning call.

Absorption in professional responsibilities conflicts with the physician's tradition as scholar. The demands of the medical curriculum and meeting its entrance prerequisites are such that the medical student has little time for the pursuit of biography, history, languages, literature, or philosophy. Cultivation of some of these interests obviously has to be left to postdoctoral years, it being hoped the student will, during his medical school career, have acquired a love and lust for a more intimate acquaintance with literature and the humanities, despite his many commitments to the acquisition of a fine professional training.

Lucky indeed is that youngster who acquired a taste for good literature at the home fireside and learned to devour a book or two a week. Many a youngster of my generation in rural areas, after the evening meal, gathered around a small central table in the living room in front of a coal stove, with a kerosene lamp the only source of light. There being no other distractions and movies yet not having become popular, let alone radio and television, reading was the only diversion.

All professions strive to promote opportunities for their licentiates to continue improving themselves throughout their professional lives. On this score, medicine probably has as high standards as any of the professions, which does not gainsay the accomplishment is all it should be. The purpose of professional schools is to provide the basic training that will equip the recipient to practice his profession.

The physician was once counted with the theologian and the lawyer as amongst the most learned of men, versed in a knowledge of literature and the arts as well as in the rudiments of his profession. Today, despite his seven to eight years of college training, the Doctor of Medicine cannot truly be labeled a literate or lettered man. One might well entertain similar reservations concerning members of the clergy as well as students of the law. The physician falls in between the humanist and the scientist, representing a man exposed to, but not steeped in, the traditions of either culture, but perhaps he does as well on this score as most professional men and can discourse with as many evidences of learning in the humanities as the student of literature does in the sciences. The professional commitments of all disciplines today unfortunately absorb the greater portion of the time and energies of their following.

Though his license on graduation gives the medical school graduate authority to engage in any type of practice, the young doctor with his newly acquired mortarboard and hood knows he has yet to qualify, by added training and the discipline of experience, for the special problems he will encounter in his practice.

INFLUENCE OF SPECIALISM UPON PRACTICE

With the coming of many well-equipped Hill-Burton Hospitals in Minnesota in the postwar years, there has been a tremendous growth and dispersion in the number of medical specialists, including surgeons. This circumstance obviously does not stem from any influence irradiating from the medical school but is a natural result of the trend of the times. Many communities invoking federal aid have made elaborate preparations for the establishment of fine community hospital facilities with encouragement of, as well as provision for, specialty practice. The recent trend toward specialization also reflects a realization on the part of recent medical graduates of how difficult it is to attempt to embrace all of medicine as one's scope of operation.

The trend is universal and will undoubtedly continue. However useful and important the general practitioner or generalist has been and will continue to be to his community, it is inevitable that his field of activity will be encroached upon by the ever increasing number of specialists. Since 1949 there has been approximately a 200 per cent increase in medical and surgical specialists in our state, and the extent of the dispersion to smaller municipalities of the state is even more striking. As the clinic idea for the practice of medicine, originally enunciated by the Mayo brothers, becomes more generally accepted by both profession and public, the activity of the generalist in clinic enterprises in the community will undoubtedly become more definitely delineated.

Practice in hospitals whose primary purpose is teaching, is, in many respects, a clinic type of arrangement. In time, this too may well become a dominant feature of voluntary hospitals, where a nucleus of full-time men in the various specialties also is coming into vogue, especially in hospitals keen on developing a strong training and research program. There is little doubt that this pattern of organization is finding increasing favor among voluntary hospitals whose governing boards have an eye to the future.

Obviously, the narrow specialist is not the proper person to establish the first contact between the public and the profession. This important role will continue to be occupied by our generalists, who still constitute the central corps of our profession. Some of my surgical teachers engaged in the general practice of medicine, delivered babies, and prescribed for many medical ailments, which unorthodox practices have gone completely out of fashion with the increase of specialism and the coming of the Boards.

THE PUBLIC'S GROWING CRITICAL ATTITUDE TOWARD OUR PROFESSION

Atherton Bean, in a very knowledgeable address, "My Grandson—Your Patient," given on the occasion of the opening of the fall session of the medical school in September 1962, described the greater orientation of the average citizen today in medical lore.[31] He spoke also of the greatly improved earning capacity of the average practicing physician during the postwar period and the increasing necessity to share and discuss the patient's problems with understanding and sympathy.

The future of the practice of medicine, said Bean, will depend upon how the physician responds to this important responsibility, so keenly felt by the patient. The success of the doctor, mused Bean, in time past was reflected and measured by his competence and spirit of dedication. These must be maintained if the physician is to continue to hold his high place in the estimation of patient and public.

In Aesculapius, medicine created for itself a divine ancestor, and physicians are his sons. Bean might well, therefore, have added that, in the classical tradition, the public expects to find in the true physician some of the attributes of a god. We physicians must not cast our gods overboard and become too absorbed or concerned with materialistic considerations. Triumph over this human fraility is as much a part of the physician's code as are his struggles against death and disease.

Weelum MacLure, beloved doctor of Drumtochty, immortalized by Ian Maclaren in the "Doctor of the Old School," is not a forgotten legend, I am certain. Disregard of self and a dedicated devotion to his patients is still the guiding precept of a large segment of our profession, I believe.

FATE OF OUR GRADUATES IN THE SURGICAL TRAINING PROGRAM

Since initiation of the graduate school program in 1914 in the medical school, 85 surgical fellows from this department have earned the Ph.D.; an additional 93 M.S. degrees have been awarded. Registration of surgical fellows in the graduate school has been compulsory, but a number of our surgical trainees have not remained long enough to earn a graduate degree. This latter group have been predominantly practice oriented and have come to occupy positions of responsibility and trust in their communities. Over the years, we have had an increasing number of fellows from abroad who have come for periods of six months to remain as long as two to three years, returning to their own university to assume important academic positions.

Of our trainees today, 33 are full-time professors of surgery or heads of departments of surgery. An additional 30 have full-time academic positions at lower ranks. Eleven of our surgical trainees have won Markle scholarships. In all, more than 100 of our former surgical fellows are engaged in some kind of academic teaching responsibility. Two of our trainees who succeeded to chairs of surgery are sons of former teachers in this department—Dr. Clarence Dennis' father, Warren A. Dennis was a much admired and respected teacher in this faculty, as was Dr. Harry B. Zimmermann, Bernard Zimmermann's father. Dr. Wallace Ritchie, who will join our group as a surgical fellow in July 1963, will be a fourth-generation Ritchie identified with the school, tracing down from Parks Ritchie, dean and professor of obstetrics, to Harry P. Ritchie, clinical professor of surgery, to Wallace Ritchie, clinical professor of neurosurgery.

Elsewhere, I have indicated my enthusiastic approval of the graduate degree program in clinical disciplines.[26-28] The interposition of this extra hurdle serves to provide many a surgical fledgling with his initial experience in research. He, like myself, learns that something he dreaded has an alluring and fascinating attraction.

WHAT OF THE FUTURE?

The fate of any enterprise is in the hands of those from whom it derives its strength and inspiration. The great impetus lent the school at the time of its rejuvenation, under Vincent, Lyon, Ford, and Jackson, and continued under Deans Dichl and Howard and a succession of sympathetic and energetic presidents, still sustains its momentum. There is no suggestion or evidence that the influence of the original strong and dominant strain has run out.

The fortunes of institutions fluctuate. A certain reciprocal and synergistic constellation of cooperating forces and influences is often the driving force which propels a venture forward with great and sustained momentum. Mysterious and intangible as are the decrees of fate, good will, dedication, and selfless devotion of responsible participants to the highest principles and ideals of universities weigh heavily in the scales of fortune. The teacher of increasing years and diminishing powers, in contemplating the accomplishments of his younger colleagues, views with mingled feelings of humility, pride, and deference the advancing phalanx of youth, confident that the future of the institution they serve will continue bright in their hands. The founders of this school too, I believe, would lend a nod of approval to their lengthening line of successors for sustaining the high hopes of the university so ably expressed by Folwell, its first president, almost a century ago.

It is a pleasure to acknowledge the helpful cooperation that pursuit of this inquiry has had from Mrs. Maxine Clapp, principal librarian of the university archives, and her associate, Miss Clodaugh M. Neiderheiser, in locating and providing much of the source material from a miscellany of university records. Miss Lois Fawcett of the Minnesota Historical Society kindly checked the accuracy of some source materials. Mr. Clifford Plank was helpful in providing information on the cost and sources of the moneys for our medical school buildings. Miss Marilyn Borkon, senior secretary in the Department of Surgery, also lent a helpful hand in making data from many sources available. The manuscript would have been even longer had it not been for the skill with which my wife, Sarah D. Wangensteen, exercised the editorial prerogative of deletion.

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Role of the Municipal Hospital in the Training of Surgeons

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> *" . . . so it will be your highest mission, students of medicine, to carry on the never-ending warfare against disease and death, better equipped, abler men than your predecessors, but animated with their spirit and sustained by their hopes, for the hope of every creature is the banner that we bear."*
>
> SIR WILLIAM OSLER

MUNICIPAL HOSPITALS have served mankind as prime surgical training centers for several centuries. Numerous factors have made this so. The abundance of richly varied pathology, always present in the cross section of humanity treated in municipal hospitals, has provided broad experience with all kinds of disease. Opportunities to assume full responsibility for large numbers of seriously ill patients have helped young surgeons mature quickly in the progress of their training. Finally, the privilege of study under a large group of practicing surgeons, working together in a common cause, has been advantageous both to the surgical trainee and to the attending clinical teacher.

Unfortunately, while surgery advances with scientific and technical achievements, we currently are charting for surgical education a course that reverses our strongest gains painfully won during the past hundred years. I refer to the current philosophy of encouraging a private care basis for the medical and surgical needs of large segments of our people who require support from governmental agencies for their health needs.

Altruistic as the present plans appear, several serious results are inevitable. First, the already diminishing number of practicing doctors for each unit of the American population (at present, 132 per 100,000 people) will be asked to care for an inordinate burden of older patients who have frequent serious illnesses. Second, the basic programs for teaching adequate numbers of qualified specialists will be concomitantly endangered. This comes at a time when the need for more doctors creates a demand for 20 new medical schools within the next decade!

Realizing the imminence of important socioeconomic changes in our country, all physicians professing a deep concern for medical and surgical education should strongly support efforts toward preservation of the hard-won opportunities for learning now enjoyed by our residents and interns in tax-supported hospitals. As surgery becomes increasingly complex, positive steps must be taken to assure the adequate volume of good teaching patients so vital to the growth of surgical competence in our future specialists. In truth, I believe we will fail in our responsibility to future generations if we jeopardize the basic system of welfare patient care now operative in most communities—that humanitarian and wise system providing care for the "nonpaying" or "insurance-depleted" patient in municipal or state-supported hospitals. Medical education in general and surgical education in particular have slowly, but deliberately, progressed over the centuries, culminating in the present methods of training which, although not perfect, are, in many respects, exemplary and worthy of preservation.

GROWTH OF CLINICAL TEACHING

During several thousand years, medical education in all civilizations has been inseparably bound to man's knowledge of the natural sciences. As each society has matured and imperceptibly merged into succeeding generations, the education of physicians has reflected the degree of intellectual freedom characteristic of the age. As our western culture emerged from the mysticism of the dark ages, an intellectual inquisitiveness gradually developed, which led to profound advances in many of the natural sciences. Medicine and surgery, as scientific pursuits, de-

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veloped and grew apace with these gigantic strides until, in our time, the horizon for medicine and surgery is broad and limitless.

Hand in hand with the growth of intellectual inquisitiveness has come medical and surgical research; increasingly finer observations of natural phenomena now replace earlier reliance upon didactic proclamations which, all too often, were erroneous. In our day the student of medicine is encouraged to sift knowledge, dissemble and reassemble facts into countless new relationships, and observe the course of diseases in their infinite varieties and manifestations.

In the wide spectrum of medical educational methods, the direct use of patients for teaching is of recent origin. Not until 1543, when Giambattista DaMonte introduced bedside teaching at the famous university hospital of Padua, was the valuable practice of training medical students through clinical observation and patient contact seriously appreciated. Even after DaMonte's death, bedside observation and teaching were all but forgotten until Albertino Bottoni and Marco Degli Oddi revived the practice early in the seventeenth century. Otto Heurne and Ewald Scrivelius fostered clinical teaching on the surgical wards at the University of Leyden in 1636. However, didactic teaching was still practiced widely throughout the civilized world until the middle of the nineteenth century, and the English and French medical schools were among the western nations that pioneered in clinical teaching. Indeed, it was Emerson who wrote of the English that: "theirs is a logic that brings salt to soup, hammer to nail, oar to boat, and necessarily, the physician to the bedside." In 1867, our own Oliver Wendell Holmes beautifully expressed the basic importance of a medical student's contact with the sick patient when he wrote:

> The most essential part of a student's instruction is obtained as I believe, not in the lecture room, but at the bedside. Nothing seen there is lost; the rhythms of disease are learned by frequent repetition; its unforeseen occurrences stamp themselves indelibly on the memory. Before the student is aware of what he has acquired he has learned the aspects and causes and probable issue of the diseases he has seen with his teacher and the proper mode of dealing with them so far as his master knows.

One of the first surgeons to substitute practical demonstration upon patients for older methods of didactic teaching was Sir Astley Paston Cooper of England. This famous pupil of the incomparable John Hunter was idolized by his students. They followed him in enthusiastic throngs in his clinics. Few other teachers to this day have been so solicitous that nothing should be hidden from the observation of the pupils as this early renowned clinical surgical teacher.

Today, the complexity of modern medicine imposes the need for increasing amounts of patient contact and patient responsibility for several additional years of formal training, well beyond medical school days. Indeed, in the training of surgeons the greatest urgency attends the acquisition of advanced clinical experience. Residents-in-training must have extensive contacts with large numbers of sick people for whom they can be responsible. In education, the student must always build forward and upward on the foundations of his teachers; occasionally, fourth- and fifth-year surgical residents today eclipse some of their teachers trained a decade or more ago. This is proper for advancement and improvement in our profession, but it is equally apparent that the soil from which such competence can spring must be preserved!

Surgery has come a long way from earlier days of preoccupation with amputations, excision of superficial tumors, and lancing of abscesses. A great innovation occurred in the surgical world when antisepsis was introduced by Joseph Lister in 1867. The abdominal cavity had already been successfully entered by Ephraim McDowell in 1809, and the control of sepsis prompted a surge of technical advancement which has grown into the modern era of physiologic surgery.

The role of the surgeon has changed greatly over the past hundred years and, in truth, he is now called upon to be a master diagnostician, technician, and experimentalist; a diligent scholar, both of past and present; and a prescient visionary. How great is our challenge to cope successfully with the increasing complexities of modern surgery and the continual press of sociologic concepts tending to hamper surgical education!

GROWTH OF SURGICAL TRAINING THROUGH GRADED RESPONSIBILITY

During the late nineteenth century, the great surgical clinics of Europe and England provided a rich heritage for American schools and hospitals. Extensive training under the great masters, such as von Bergmann, Kocher, Billroth, von Eiselsberg, and others, was available only to a relatively few candidates, but their contributions did influence greatly the quality of surgical training which followed in America. Our present system of graded responsibility during surgical training was given its strongest impetus at Johns Hopkins Hospital under the quiet leadership of the master surgeon, William Stewart Halsted. Here, the coveted position of "house officer," with its broad opportunities and responsibilities, became a prize to be won only after years of diligent work both in the research laboratories and on the clinical wards.

The first half of the twentieth century has witnessed an expansion of this concept of surgical training until it is now the avowed basis of all fully accredited programs for surgical training in the United States. Until recently, major university training centers in our country had access to adequate numbers of welfare-supported patients to be supervised and cared for by resident surgeons. Currently, government subsidy on a "private patient" basis for those requiring medical welfare assistance threatens the existence of many hospitals which are repositories of the varied pathology so important to a surgical training program.

The need for broad clinical experience is keener today than at any other time. Complexity is now the byword of the surgeon's art. In 1933 the late Lord Moynihan said: "The craft of surgery has, in truth, nearly reached its limit in respect both of range and of safety!" But during the past thirty years entirely new horizons have opened, not only in the field of vascular and intracardiac surgery but, more recently, in the field of homotransplantation of whole organs. Greater challenges in surgery of the future will demand increasing attention to the excellence of our surgical teaching.

This subtle change toward overemphasis of the "private doctor–private patient" relationship for public-supported patients has become an obsession for some political groups in America. Great university hospitals maintained by tax revenue are now becoming "private patient" hospitals in a very real sense. Today, for the most part, only in the municipal hospitals in our country can young surgeons be provided a wide spectrum of clinical patients and total responsibility for the care of large numbers of seriously ill people. Recognizing our greater challenge in the training of surgeons, our best efforts should be directed toward expansion of, and increased support for, our municipal training hospitals rather than a retreat from this concept of providing care for our community-supported patients.

During recent years some surgical educators have encouraged residents to devote increased amounts of time in the dog laboratory, attempting to offset the declining clinical experience available for good teaching. Effective and important as the animal laboratory is for teaching technic and quickening the curiosity, it still is no substitute for personal clinical experience. All too frequently young surgeons from "sophisticated" research training programs in our country are bewildered and insecure when faced with full responsibility for complicated surgical problems as they assume practice in their chosen locality. Frequently, many years must pass before a degree of surgical confidence and competence is developed through clinical experience gained in the community. A surgeon must be confident and "at home" with his clinical problems, not only in the wards of the hospital but in the operating theater. He must move with assurance born of trial and testing under varied and numerous clinical experiences. Certainly, the prophetic words of Sir William Osler are pertinent today for all practicing surgeons, although they were addressed to a graduating class in 1889:

> In the first place, in the physician or surgeon, no quality takes rank with imperturbability . . . This essential bodily virtue . . . of coolness and presence of mind under all circumstances, calmness amid storm, clearness of judgment in moments of grave peril, immobility . . . the quality which is most appreciated by the laity though often misunderstood by them; and the physician who has the misfortune to be without it, who betrays indecision and worry and who shows that he is flustered and flurried in ordinary emergencies loses rapidly the confidence of his patients.

MUNICIPAL VERSUS "PRIVATE" HOSPITALS

It is axiomatic that direct, meaningful experience is the best teacher. Meaningful experience at an advanced level is not found in every teaching situation. A casual visit to the surgical wards of private hospitals in America, contrasted with large municipal hospitals, quickly points up the teaching value of the serious clinical problems encountered in municipal hospital practice. Commonly, the average private patient in the private hospital is less ill than his fellow citizen in the municipal hospital, and his surgical procedures are attended with less complicating factors. Further, the opportunity for experience with trauma of all types in the municipal hospital is exceptional.

Commonly, older citizens are treated in municipal hospitals, and in them we see a multiplicity of pathologic problems demanding the very finest of medical and surgical management. In this atmosphere, the young trainee, caring directly for the patient's needs, can quickly develop maturity and keenness of judgment under the watchful quidance of his teachers. In private hospital training programs, the surgical resident is often excessively involved in assisting at the operating table. And, in frequent instances, he is called to assist, month upon month, those whom he already exceeds in surgical acumen and proficiency. Inevitably this young man suffers from overexposure to some surgeons who are unqualified to be emulated and from overemphasis upon repetitive assisting during operative procedures.

In the private hospitals of our country, the desire for teaching may be strong in the hearts of a few worthy surgeons, but the contractural relationship between the full-paying patient and his private surgeon implies a moral obligation on the surgeon's part that should not be abrogated. Inevitably the young resident in such programs, though his years in training may be long, finds himself the proverbial fifth wheel in the inner sanctum of direct and intimate care of the patient. He inevitably suffers from his lack of opportunity to perform large numbers of the many and varied surgical procedures available to his colleagues in the municipal hospitals.

BALANCE IN THE TEACHING PROGRAM

A successful surgical training program is a delicately balanced mechanism. Overemphasis upon animal research work can be as deleterious as a severe shortage of such opportunity. Similarly, overabundance of assisting during operating procedures can be equally unrewarding for developing young surgeons. Adequate amounts of directed clinical experience at the junior resident level, a proper amount of research work in the animal laboratory, and at least twelve to eighteen months of full clinical responsibility provide a regimen best suited to complete the surgical training of our residents. On the American scene, today, no other hospital is better equipped to provide such well-balanced surgical training than the municipal hospital. Recent improvements in the "academic" side of training in most municipal hospitals has been a significant factor in rounding out and properly balancing these programs.

Thus, a pattern is available that can be applied in the future: The university programs for surgical training, which have become increasingly "academic" and research-oriented by necessity, should increase their numbers of "house cases" through every available means and continue to emphasize training of full-time surgical teachers so vitally needed for new medical schools. The municipal hospitals, improved through their increasing emphasis upon a balanced degree of academic and research endeavor, must jealously guard their participation in the community, both in direct service to the community at large and in contribution to the future for training adequate numbers of young men. The private hospitals, attempting to train surgeons, are beset perhaps with the greatest number of difficult problems. It might be wiser for the few welfare patients siphoned into these programs to be cared for in the more formal programs of the municipal and university hospitals and thus add to the excellence of the already competent programs.

Finally, the quality of the general medical and surgical care provided to a metropolitan community has commonly been linked to the presence of an excellent municipal hospital program. The financial rewards which accrue to the community in terms of lowered cost per patient cared for in the municipal hospital system, as against a full private system, are exemplary. In addition to providing the highest quality emergency and catastrophe medical coverage for the community, to providing an unparalleled opportunity for training at the resident level in virtually all specialties, and to being a focal point for participation by large numbers of interested specialists in the community, the municipal hospital still constitutes the most economical means for giving highest quality patient care to the needy. It is incumbent upon all physicians, and most especially those involved as full-time teachers, to realize that we must have prescience in every decision made in our current problems; just as surely as we provide the best for our own people in the preservation of every good aspect of our training programs in the country, we will be doing a signal service for all humanity. The words of Louis Pasteur will carry increased meaning for this nation as it strives to live up to its position of leadership in the community of nations: "The future belongs to those who shall have done most for suffering humanity."

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The Role of Plastic Surgery in the Medical School Curriculum

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Reconstructive or plastic surgery is that branch of general surgery which deals with the repair of defects and malformations, both congenital and acquired. With greater mechanization of industry and more rapid transportation, an increasing number of individuals are seen by the physician and surgeon as the result of injuries sustained thereby. The proper care given immediately after the injury will do much to preserve tissue and function, obviate or make later reparative work more simple, and improve the final result. Accordingly, every medical student, intern, and surgical resident should have a fundamental knowledge of the principles of traumatic and reconstructive surgery.

A general knowledge of what can be done for congenital deformities will aid the practitioner in properly counseling the parents of a newborn baby so afflicted.

Our present-day, more radical, surgical approach to the management of malignancies, especially of the head and neck, often results in gross deformity. The general principles of reconstruction should definitely be a part of any surgical training program.

The proper, early care of burns may save lives and lessen the incidence of prolonged hospitalization, permanent disfigurement, and deformity. Improved functional and cosmetic results, with greatly decreased morbidity, require hours of painstaking work and attention on the part of the entire staff. Teaching the correct management of burn cases is a definite part of any surgical training program.

Cosmetic surgery is elective surgery performed in an attempt to improve the appearance of an individual. It includes face lifts and operations on the nose, ears, eyelids, and breasts. Patients often expect that cosmetic surgery will solve their social, marital, or business difficulties. Before undertaking such surgery, it should be determined that the patient is emotionally stable, and this may require preoperative psychiatric evaluation. A surgical training program should make the physician aware of the benefits of this type of plastic surgery. However, the details of management of these cases are definitely in the realm of specializd training.

The role of the plastic surgeon in the surgical training program of the medical school is to teach the fundamental principles of case management. Much of the technical detail can best be taught only where specialized residencies in plastic surgery are available. For adequate training in the specialty of plastic surgery, the American Board of Plastic Surgery presents certain minimal requirements. After graduation from a recognized medical school and completion of an approved internship, three years' training in general surgery as a resident in an approved surgical service is required. This may include some time on surgical specialty services. Necessary training in general plastic surgery, including maxillofacial surgery, requires at least two years in an approved residency in plastic surgery.

The relation of basic sciences to fundamental surgical principles should be emphasized. Adequate knowledge and training in the handling of emergencies is essential, especially the relation of the plastic surgeon to the team approach in handling multiple injury cases. Thorough knowledge, in the care of shock and hemorrhage and of fluid balance, chemotherapy, anesthesia, and wound healing, is also necessary. Under supervision, the trainee should have ample opportunity to operate independently on cases.

This type of training should prepare the plastic surgeon for advancement and development in his chosen field.

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Building an Effective Training and Teaching Program in a Voluntary Hospital

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This essay is premised on the hypothesis that the truly superior hospital will have a superior house staff! In order to ascend into this range of excellence, goals must be set up and their attainment fought for. The path up will not be smooth and, unfortunately, there are no readily available maps to make the route less tortuous. Much vision, money, sweat, co-operation, and, yes, even heartache must be expended on this trip, but the reward for those who finally scale the peak is the balmy view of their patients receiving better care.

Once an adequate physical plant is available, the next demand of a teaching program is the wholehearted belief in the need for such a program by not only the majority of the medical staff but also the administration. The goals of such a program are: (1) education of postgraduate trainees, (2) education of attending staff, and (3) improved routine and emergency patient care by virtue of continuous house staff coverage. It would be best if, before undertaking this venture, the medical staff and administration could thoroughly familiarize themselves with their ensuing problems and obligations by close scrutiny of other institutions—those which have successfully tackled this problem of fruition and those which have not succeeded in doing so.

When a firm decision has been reached regarding the establishment of a teaching program, another major decision needs to be made regarding whether full-time medical personnel will be necessary for the administration of the program. Admittedly, this is a luxury item, since there are many programs currently being run solely by the voluntary staff. However, the time demands placed on such individuals are such that the program is fostered by much sacrifice from the personal practice and the leisure of the men involved. Generally speaking, when one finds a smoothly operating program under these circumstances, one or two truly dedicated individuals will be at the helm. If such individuals are available, a full-time director will not be necessary. Otherwise, it would be expedient to acquire the full-time man from the onset to suffer in the "birth pangs."

The merits of this new full-time teaching director type of specialty are evidenced by its increasing popularity. A decade ago, one could probably have numbered these positions on his fingers, whereas, today, in the United States, there are 357 full-time and 493 part-time positions occupied.

While the title of this article lends emphasis to the surgical program, the development of active teaching programs in all of the major specialties should be in the blueprints of the founding fathers. Such a broad program will seldom be feasible as an initial event, but to begin a surgical program without its counterpart on the medical service is ill-advised. The functioning of either of these services will be vitally dependent on the success of its counterpart. Administrative and teaching duties in these two units are too diverse to harass a single individual with such dual responsibilities. It is virtually mandatory that provision be made for this by the establishment of full- or part-time directors in both departments. In contrast to the large institution's interdepartmental isolation and independence in regard to various teaching programs, there is much interchange of thought and ideas brought forth in combined interdepartmental conferences in smaller institutions.

The departments of pathology and radiology must be adequately staffed so that, in addition to the purely service functions, participation in the teaching program becomes the privilege and obligation of these vital men. Certainly no surgical program could exist without active participation of the surgical trainees in the pathology department.

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ADMINISTRATION

The administration must be aware of the expense before embarking on a teaching program, and appropriate budgets should be set up to encompass the development and operation of the program.

Provision must be made for board, room, and compensation of the trainees. Like the cost of labor, the exact amount will vary with the times, and the number of trainees to be provided for will be proportional to the size of the unit being staffed. It should come as no surprise to realize that we are no longer in an era of "slave labor" insofar as house staff monetary reimbursement is concerned. The day is long gone when the young surgical house officer is willing to forego marriage and a family in order to worship in financial servitude at the feet of his preceptors.

It might be theoretically practicable to train a medical house staff utilizing only private patients, since it is possible for any number of initiates to listen to one heart murmur or prescribe medication. However, it is physically impossible for more than one hand at a time to hold a scalpel deftly. While a great deal can be learned from the art of observation, the final course in surgery must consist of standing on the operating side, rather than the assisting side, of the table. The perspective and problems become surprisingly different with such a simple change of position. The administration must assume the responsibility of providing a "free bed" program to serve as a surgical training ground. At least 15 to 20 per cent of the bed space should be assigned to this service function.

In addition to the inpatient requisites of such a free bed program, the outpatient program should be considered. The establishment of an inpatient program accomplishes little unless facilities are available for preoperative evaluation plus the all-important postoperative follow-up. Such a unit also provides for the observation and treatment of emergency surgical problems.

Simple mathematics soon divulges that, with the present-day high cost of hospital operation, the financial obligation engendered by such commitments might seem almost astronomical. Fortunately, by collection of insurance and utilization of part-pay plans, a percentage of this expenditure can be reimbursed.

Surprisingly, in these days of legislative demands for government-endowed medical assistance to the needy, only a small number of patients apply for free beds in the voluntary hospitals of the Minneapolis-St. Paul area. It would almost seem as if it were easier to provide funds to make the beds available than to keep them occupied. Here, too, effort by the administration, working closely with the staff, as well as governmental and private agencies, must be extended to make the surgical program a reality. And a reality it must be, for there are enough good surgical training programs in existence that the Conference Committee on Graduate Training in Surgery carefully examines each program before accepting a new one or granting renewal to an established one. The criteria they most rigidly demand, and rightfully so, are opportunities for the surgical trainee to develop independence of thought and action.

While, admittedly, there will be many headaches assumed by the Voluntary Hospital Governing Board that activates and maintains a first-class teaching service, they can relax with a justified, deep pride of accomplishment. Theirs will be a superior service to the community. They will have inaugurated a unit with better service function and they will have provided insurance for continued excellence of treatment by virtue of a staff that continuously demonstrates by its teaching and research accomplishments an ability to keep in the vanguard of medicine.

MEDICAL STAFF

One of the prized possessions of the busy practicing physician is his time. Most guard this with greater concern than that for their wallet; no insurance policy will turn back the hands of the clock and thereby repay lost time. Nevertheless, each member of the medical staff who desires to partake of the fruits of a teaching program should realize that he must part with some of this vital commodity.

Many surgeons have the feeling that the only contribution they need make to such a program is to permit the house staff to work with their patients and assist at surgery. Admittedly, this is important, but it is not enough. Every man must be prepared to participate actively in two or three teaching conferences each week. In addition, he must take his turn on the teaching service, supervising the house staff in the care of the "free bed" patients in the operating room, on the ward, and in the outpatient clinic and emergency room. Foolishly, some have the idea that the hiring of full-time men obviates these duties. If the program runs as it should, what they are actually acquiring is a coordinator—to smooth the rough spots but not to erase their obligations.

All should recognize that teaching is learning. The contribution of time so spent will eventually reap a greater harvest than is readily recognized, for this is an ideal form of learning. This might be designated as a circular form of education in which the teacher learns new lessons directly or indirectly from his pupils. Each year these young men, bright and eager with the eternal enthusiasm of youth and a new diploma, transfuse into their peers medical lore acquired from far-flung institutions of knowledge. In addition, they bring the brashness of a "prove it to me" attitude that brushes aside any pedantic nonsense and prevents an aging staff from basking in past glories. Such a system of checks and balances assures each patient a more nearly optimal care. To assist in this goal, the hospital can profitably be divided into two services: teaching and nonteaching. Periodic assessment of contribution is then made to ascertain that privilege of membership in the former group is still in order; membership in the latter group, of course, is automatically accompanied by relinquishment of house staff assistance.

RESEARCH

Clinicians who have not matured in an atmosphere steeped in research find it difficult to understand the importance of a research laboratory in a private hospital. However, here, too, they have a link with the future. It is much easier to live in the past but, unfortunately, progress is not made in this fashion. Admittedly, startling new discoveries cannot be made in every such laboratory, but the chance for participation in new developments in the experimental laboratory puts one ahead of his competitors. Therefore, participation in research facilities by the medical staff must be encouraged. To be sure, certain ground rules must be set up to prevent individuals insecure in their "appendectomy technics" from utilizing these facilities for purposes of perfecting skills that should have been developed during their formal training period.

Insofar as the surgical training program is concerned, the research laboratory represents an ideal training ground. Surgical investigations usually involve the performance of experimental surgery, and where could the prospective surgeon get a better opportunity to perform his first bowel resection, anastomoses, gastrectomies, and vessel surgery than under these circumstances? Recently, many pages have been written lamenting the loss of the indigent teaching patient to the insurance programs. Gone, or going, are the days when the surgical house officer did 100 to 200 of each major procedure during the course of his training period. The answer to this distressing state of affairs has not been conclusively demonstrated, but it would appear that better use of laboratory facilities might be a partial solution.

Of even greater importance to the young neophyte are the habits of thinking developed in the laboratory. Jones[1] has very aptly stated: "Good research or investigation is best done in an atmosphere of continuous criticism, especially self-criticism. Even if he does not continue in investigative work, such an experience teaches a physician the discipline of meticulous observation and careful thinking. His own approach to the problems of the sick accordingly becomes more thoughtful, more critical, and less tolerant of more or less empirical, although accepted, methods of diagnosis and treatment."

CONCLUSIONS

At present, many community hospitals are lamenting the lack of house staff trainees available to fill the vacancies in their programs. This is simply another example of the age-old principle of supply and demand. There may be a serious question as to whether we do not have too many surgical training programs in the United States. For these reasons, if for no other, there is no room for mediocrity, and voluntary hospitals with training programs, of necessity, will have to reassess and regroup. All training programs must be cut down to the hard core of essentials and all trivial, noneducating "cheap labor" chores abandoned. This will demand financial support on the part of the administration and generous contribution of the attending staff's time and patients. Almost needless to say, the program that has affiliation with a medical school, in addition to the ardent backing of these two groups, is thrice blessed.

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The Role of Veterans Hospitals in Postgraduate Surgical Training

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In the past, a majority of surgeons in this country were trained in the large teaching clinics that cared for indigent patients. With the decrease in number of such service cases occurring after World War II, the problem of providing operative experience for surgeons-in-training became more acute. An alternative approach was clinical teaching, utilizing private patients, which, although it can be successful, means a return to the preceptoral form of training and a partial abandonment of those surgical residency training methods proved so sound by Halstead. Another choice was the wider utilization of patients in the Veterans Administration Hospitals.

Residencies and internships in Veterans Administration Hospitals were established by Congress in 1946, and today this program is one of the important factors in American graduate medical education. By 1949, all of the initial Veterans Administration residency programs had been approved by the American Medical Association. Today, 65 veterans hospitals are affiliated with a medical school, and 2,726 doctors are in specialty training at veterans hospitals.

Since 1947, 50 residents in general surgery and 11 in thoracic surgery have received all or a major portion of their training at the Minneapolis Veterans Administration Hospital. The supervision of this residency training program has been the responsibility of the dean's committee of the University of Minnesota, which consists of the dean of the medical school and the senior faculty members of the major departments. In turn, the medical staff of the Veterans Hospital hold faculty appointments in the medical school. Consequently, the close association between the university and the Veterans Administration training program has created a common philosophy, not only of patient care but also of research and educational methods.

While a decrease in the case load was occurring in many other teaching institutions, the number in veterans hospitals increased. In 1961, there were 562,384 admissions to veterans hospitals, an increase of 115,311 from 1951. The availability of such material for resident responsibility is indicated by the fact that, in 1961 at the Minneapolis Veterans Hospital, 3,431 from a total of 3,971 operative procedures, including the most complex cancer and heart operations, were done by residents with a staff surgeon as first assistant. The operations done by an average resident at the Minneapolis Veterans Hospital during his third and fourth years of training are listed in the table. This material is supplemented, because the patient population is preponderantly male, by rotation of residents through one or more services of other teaching hospitals to afford training in pediatric and gynecologic surgery. The resident may also earn an advanced degree from one of the basic science departments.

Many prominent medical educators believe that the best surgical training must include time in the surgical laboratory. In a similar sense, the best surgical teachers come from among those clinicians who also spend a portion of their time in investigative work. The importance of this proposal is recognized and practiced by the Veterans Administration. Its increasing interest in medical research is illustrated by the increasing amount of money available for investigators. In 1952, the research budget for all Veterans Administration Hospitals was $2,955,256; by 1961, it had increased to $23,500,000. In an additional attempt to encourage medical research, a program for clinical investigators has been established. This provides, to a person finishing his residency, a salary of $10,000 a year for three

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years as well as a research grant of $15,000 each year. The over-all encouragement thus provided supports this thesis: A strong research program is basic to the continuing excellence of medical care in veterans hospitals.

As a consequence of these interests in teaching and research fostered in veterans hospital surgical departments, the nation now has many additional institutions that can provide training programs comparable with the best anywhere.

AVERAGE NUMBER OF MAJOR OPERATIONS DONE BY A RESIDENT OF THE MINNEAPOLIS VETERANS HOSPITAL DURING HIS THIRD AND FOURTH YEAR OF TRAINING

Head and neck	
Craniotomy	1
Glossectomy	1
Parotidectomy (or excision of tumor)	2
Radical neck dissection	4
Thyroid, operations on	3
Other major head and neck surgery	3
Breast	
Radical mastectomy	2
Thorax	
Lobectomy	4
Segmental or wedge excision, lung	6
Thoracotomy, exploratory or drainage	2
Thoracoplasty, all types	2
Other major thoracic surgery	4
Abdomen	
Abdominoperineal resections	2
Appendectomy	9
Cholecystectomy	14
Cholecystostomy	3
Common duct, operations on	12
Colectomy, partial or total	16
Colostomy	6
Enterostomy, all types	3
Exploratory laparotomy	13
Exploratory and lysis adhesions	3
Gastrectomy, partial or total	22
Herniorrhaphy, inguinal	31
Herniorrhaphy, all others	4
Pancreas, operations on	2
Perforation, closure of	5
Pyloromyotomy	7
Resection, small intestine	4
Splenectomy, for trauma	3
Splenectomy, for disease	1
Vagotomy	11
Other major abdominal surgery	4
Anorectal	
Hemorrhoidectomy	16
Other anorectal operations	9
Genitourinary	
Cystostomy	2
Prostatectomy, all other types	2
Gynecologic	
Cesarean section	2
Hysterectomy, all types	2
Salpingo-oophorectomy	2
Musculoskeletal	
Fractures, closed reduction	12
Fractures, open reduction	6
Other major orthopedic procedures	4
Plastic and skin	
Debridement and suture, major wounds	7
Pedicled and other major grafts	9
Extremities and vascular	
Major amputations	17
Embolectomy	1
Lumbar sympathectomy	11

Single- and Double-Contrast Coronary Arteriography

Contributions of Cardiac Surgery to Cardiology

C. WALTON LILLEHEI, M.D., and AYDIN M. BILGUTAY, M.D.

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One of the significant contributions to cardiology ensuing from the rapid developments in cardiac surgery has been the stimulus to development of accurate, safe methods for the precise diagnosis of intracardiac and vascular anatomic abnormalities.

Very early our surgical group appreciated the fact that there were 4 major factors of coequal importance in the routine performance of open cardiac corrective procedures at a low and predictable risk. These are: (1) a precisely accurate preoperative anatomic diagnosis of the abnormalities present, (2) a physiologically efficient body perfusion, (3) complete surgical correction of the lesion present, and (4) vigilant observation in the early postoperative interval to detect incipient complications before they occur since otherwise, so often, the first overt evidence of a major complication will be cardiac arrest.

In the recent past, for example, if a patient with significant valvular heart disease was under medical treatment for decompensation with digitalis, diuretics, salt, and exercise restriction, his physician usually wanted to know whether the over-all disability was due to abnormalities of the mitral valve only, the aortic valve only, or multiple valvular abnormalities. However, such knowledge was not crucial in regard to the success or failure of the medical treatment. On the contrary, it is absolutely essential that the cardiac surgeon planning intracardiac corrections for such a patient have an exact assessment preoperatively of each of the intracardiac abnormalities present and an accurate quantitative estimate of the contribution of each to the overall disability. Further, information about ventricular contractility, myocardial reserve, and status of the coronary circulation are all needed to permit accurate preoperative planning of the corrective procedures needed and to estimate the results likely to be achieved

Some[1] have broached the thought that because the cardiac surgeon is equipped with the heart-lung machine and can open any desired cardiac chamber and inspect it under direct vision, a precise preoperative diagnosis has become less important. From experience in 2,000 open cardiac operations, we believe quite the contrary. Unexpected pathology encountered at operation usually requires improvisations which, at times, may be brilliantly successful but in the long run, reliance upon such an approach inevitably pyramids surgical morbidity and mortality.

As a consequence, our surgical group has been particularly interested in the development of more exact methods for diagnoses of cardiac and vascular lesions in vivo.[2-7] In this endeavor, technics for selective heart catheterization and cardioangiography have provided the most fruitful areas for investigation, and the dividends have contributed significantly to the rapid gains that have been recorded in the surgical treatment of both congenital and acquired heart disease.

Nonetheless, this very rapid progress has made it equally obvious that therapy, either medical or surgical, for the greatest problem in the cardiovascular field—the fatal "heart attack" or coronary thrombosis—currently remains unsatisfactory. In fact, in the fifty years' time that has elapsed since the epochal clinical papers of Herrick[8,9] and the introduction of the electrocardiographic technics by Einthoven and associates,[10] there have not been gains in the therapy of coronary arteriosclerosis sufficient to reverse its steadily increasing incidence, whether that be relative or actual, or both. However, this is not to ignore the tremendous accumulation of valuable background knowledge that has

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occurred during this period through the efforts of many.

Perhaps one of the most significant gains in this regard has been the realization that the development of coronary arteriosclerosis is not the inevitable price of aging but, rather, a distinct disease afflicting younger people also, only less frequently. Thus, as in any other disease, satisfactory treatment, prevention, or even cure is possible and, in fact, probable. Moreover, from the large body of basic medical and surgical information already available, widespread application of certain concepts could rapidly reverse this progressing death rate. The crux of the problem appears to be lack of any unanimity of opinion as to what factors are of major importance and which are of lesser significance or even erroneous. Much confusion still exists, and we believe that the key to unraveling this chaos lies in the development and widespread use of improved diagnostic measures for coronary arteriosclerosis.

Too long have clinicians been content to rely upon the patient's history and electrocardiogram for a diagnosis of coronary artery disease. As valuable as these entities may be, in general, their shortcomings are readily apparent. The electrocardiogram is a measure of tissue injury or death and advanced coronary arteriosclerosis may exist without evidence of either. In fact, sudden ventricular fibrillation and death frequently occur without evidence of tissue death. Adelson[11] found no evidence of new tissue damage in one-third of 500 patients dying suddenly due to coronary arteriosclerosis; in an additional one-third, the evidence for tissue damage was equivocal. As Beck[12] has emphasized, the probable mechanism of death in these patients is an electrically induced arrhythmia (ventricular standstill or fibrillation) initiated by uneven myocardial oxygenation.

As for evaluation by a careful history, a patient sufficiently versed in the classical symptoms of coronary arteriosclerosis could, if he desired, walk into the office of any cardiologist, however astute, and recite a history that would force the cardiologist to conclude that the patient had coronary arteriosclerosis—regardless of what the electrocardiogram disclosed.

Such a state of affairs obviously has not been conducive to either medical or surgical progress in the treatment of this condition.

Several years ago, we became convinced that, in a large part, the uncertainties and doubts in both the surgical and medical aspects of this problem were related to the lack of reliable methods for precise and exact diagnosis of location and extent of disease within the coronary arteries. The most feasible means for improving this situation appeared to us to be selective heart catheterization and coronary arteriography.

Such methods are now available and safe; they add a third dimension to the diagnosis of lesions in the coronary arteries, although they are not yet being widely utilized, especially by cardiologists and general physicians. Their value to the cardiac surgeon is obvious, and we would consider it poor practice to perform an elective operation upon the coronary arteries without the knowledge obtained from preoperative coronary arteriography. Moreover, the potential dividends are equally great for those investigating new surgical or medical methods for prevention or treatment of arteriosclerosis. For example, the current controversies as to the effectiveness of weight reduction, special diets, exercise, abstension from smoking, or anticoagulants in the therapy of coronary arteriosclerosis could be resolved quite readily by selecting an appropriate series of patients and carefully documenting the anatomic status of their coronary arteries by coronary arteriography. Then, in a controlled manner, the therapy under consideration could be administered, followed by periodic objective reassessments by means of arteriography. If the particular therapeutic agency under study were truly effective, this fact would become obvious rather quickly and the series of patients would not need to be large nor the time interval long.

CORONARY ARTERIOGRAPHY

Some of our recent investigative work has been directed toward the goal of improving the accuracy and reliability of the diagnosis of coronary artery lesions.

The coronary arteries receive their major share of blood supply during diastole when the myocardium relaxes and the direction of the blood flow in the aorta reverses. Anatomically, the oblique exit of coronary arteries from the root of the aorta in the direction opposite that of the blood stream also favors diastolic filling. A heart can be stopped in diastole by acetylcholine. The injection of contrast media during diastolic asystole is an excellent means for outlining narrowed and poorly perfused vessels and may offer a better way of obtaining coronary opacification.[13] This method permits favorable conditions for better coronary filling by injection of contrast media when the coronaries are more relaxed and also for more successful filming when the heart is motionless. However, even though temporary induction of asystole may be well tolerated, one is naturally concerned by the potential dangers of stopping a heart, especially a diseased one, without a more positive method for restarting than that offered by an injection of atropine which, under these circumstances of arrested circulation, may not reach the myocardium in sufficient time and concentration.

When hearts are arrested by acetylcholine (up to 20 mg. per kilogram of body weight), the ventricles remain totally responsive to a direct stimulation, either mechanical or electrical.[6,14]

The analysis of cardiac response to acetylcholine in 70 canine electrocardiograms and our experimental and clinical work[20] with the development of pacemaking equipment for control of complete heart block[15,16] suggested the combination of acetylcholine, for asystole, and pacemaker restoration of the heartbeat for obtaining coronary arteriograms more safely. Extensive experiments and repeated clinical application have proved this procedure to be simple, feasible, and safer.

Introduction of single-contrast coronary arteriography (contrast media), obtained by the method described herein, coupled with double-contrast coronary arteriography (contrast media with carbon dioxide gas) can delineate the anatomicopathologic details of the coronary arteries in a virtually photographic manner.

Technic. If atropine has been given beforehand, induction of cardiac asystole by acetylcholine is extremely difficult. It requires higher doses of acetylcholine and may lead to undesirable arrhythmias. Therefore, administration of this drug is omitted. If atropine has been given inadvertently, the procedure should be delayed until the effects have worn off.

The patient is placed in decubitus position. Light general anesthesia is employed, utilizing thiopental sodium (Pentothal), nitrous oxide, and oxygen. Serial films are exposed simultaneously in anteroposterior and lateral positions.

The contrast medium used in single-contrast coronary arteriography has been 75 per cent sodium diatrizoate (Hypaque). In double-contrast coronary arteriography,[7] 75 per cent sodium diatrizoate and carbon dioxide are the media chosen.

Single-contrast coronary arteriography. Following induction of general anesthesia and with the patient in decubitus position, the groin area is washed with pHisoHex followed by benzalkonium chloride (Zephirin). Through a cutdown in the inguinal fold, one of the superficial branches of the saphenous vein (external pudendal vein) is exposed; a long intracardiac pacemaker electrode is introduced and advanced by way of the saphenous and femoral veins and inferior vena cava into the right heart to make contact with the right ventricular wall. Through the same cutdown, the common femoral artery is also exposed and a multiple side-holed, closed-end, inverted J-shaped, No. 320 polyethylene catheter is introduced into the aorta and positioned just above the aortic valve. Both procedures are done under fluoroscopy using an image intensifier. The electrode is then connected to the negative pole of a transistorized pacemaker and the positive pole is grounded to the edge of the wound (figure 1). Before the acetylcholine injection, the pacemaker is turned on for an initial test to check its position and the response of the heart. This test is also recorded on the electrocardiogram (figure 2a). The aortic catheter is connected to an automatic pressure injector[17] by means of a three-way stopcock. The injector is

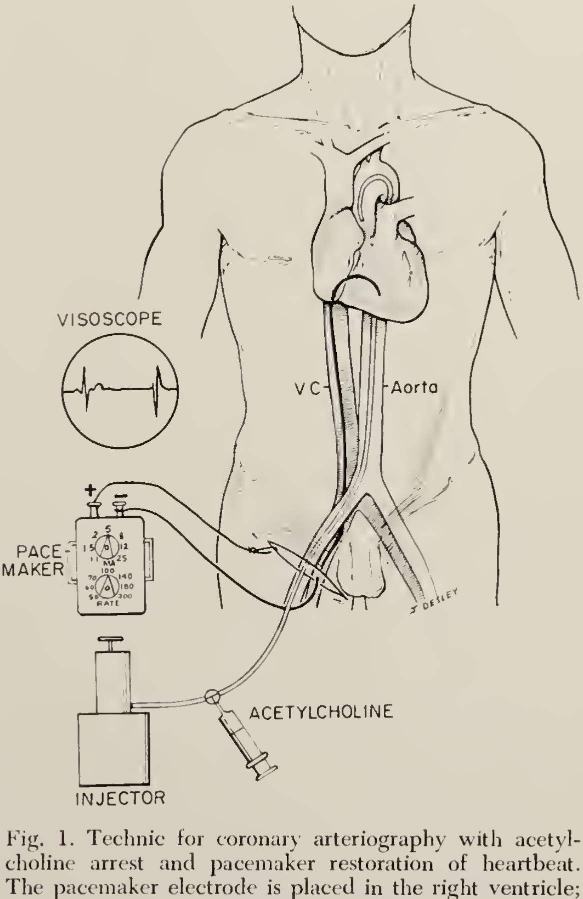

Fig. 1. Technic for coronary arteriography with acetylcholine arrest and pacemaker restoration of heartbeat. The pacemaker electrode is placed in the right ventricle; the polyethylene catheter is positioned just above the aortic valve. Acetylcholine is injected through the arterial catheter, and arrest is observed on the visoscope. The arterial catheter is then switched to the injector, the contrast media is injected, and biplane angiography films are exposed. The heartbeat is started immediately at the desired time by turning on the pacemaker.

timed with the Elema-Schonander x-ray apparatus to take biplane roentgenograms simultaneously. In an adult-sized patient, 50 mg. of acetylcholine is then injected, the stopcock is switched to the injector, and with the onset of asystole followed on the electrocardiogram or visoscope, the injector and the Schonander are triggered. Injection of 50 cc. of 75 per cent sodium diatrizoate under 140 lb. per square inch of pressure is used. After allowing three to four seconds for asystole and exposure of the films, the pacemaker is turned on and is kept on until the patient's own beat has returned without arrhythmias (figure 2b to 2f). This fact is easily checked by turning off the pacemaker temporarily. Atropine is not utilized since it often causes a tachycardia and is unnecessary.

Thus, in summary, after the desired time of asystole, the heartbeat is positively induced and controlled by the pacemaker for a period of one to three minutes while the effects of the acetylcholine wear off and the patient's own beat is well established again. The various arrhythmias and their side effects are eliminated.[6] Most important is that the return of the heartbeat is assured by the electrical stimulation. This method has been tested extensively in animals before its acceptance for clinical application. Currently the method of choice at the University of Minnesota Hospitals, it provides significantly superior visualization of the coronaries with safety insured by the ability to restore cardiac function immediately by electrical stimulation.

Double-contrast coronary arteriography. In

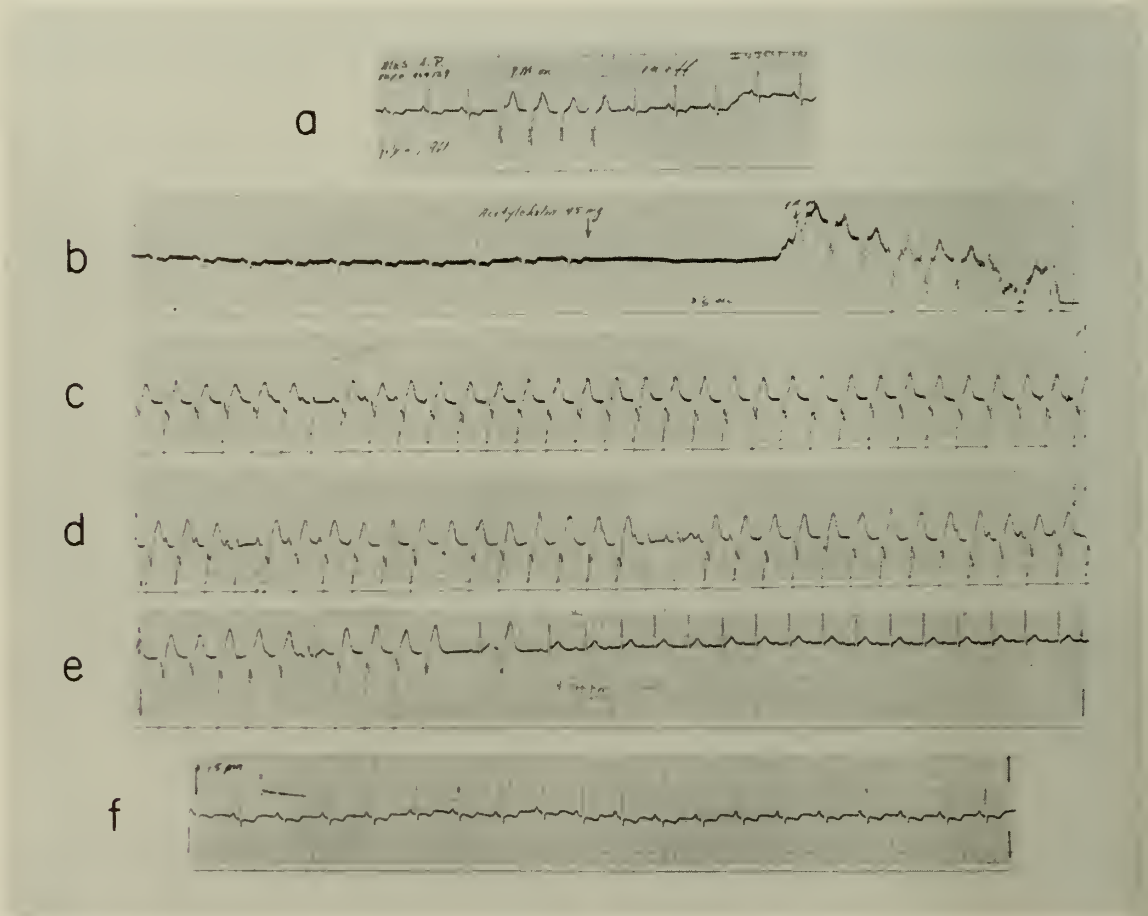

Fig. 2. Electrocardiogram of a patient during coronary arteriography with acetylcholine asystole and pacemaker restoration. *a* Response of the heartbeat to electrical stimulation as checked before the arrest was induced. *b* Injection of 45 mg. acetylcholine into the root of the aorta. Arrest was immediate and the injection of the contrast media and simultaneous x-ray filming were started with the onset of the arrest. After allowing three and one-half seconds of arrest, the pacemaker was turned on. *c* The heart's response to the pacemaker. *d* The patient's own beats begin to appear independently from those of the pacemaker. e The pacemaker is turned off after three minutes. There are still S-T elevations and positive T waves at this time. *f* Fifteen minutes later. The electrocardiogram reading has now returned to the prearrest tracing.

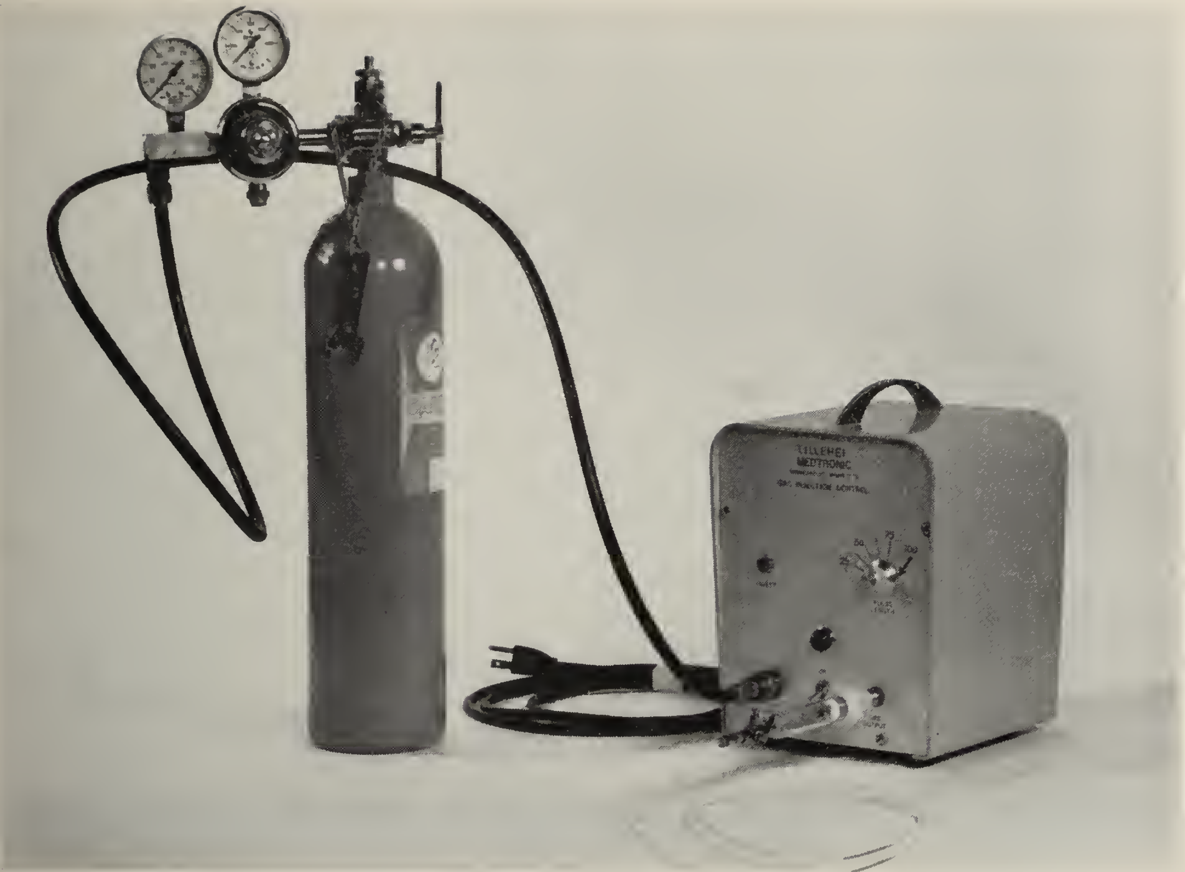

Fig. 3. Gas (carbon dioxide) control injection unit for double-contrast cardioangiography

double-contrast coronary arteriography the preliminary steps are similar. After positioning of the cardiac pacemaker electrode and injection catheter, the catheter and its reservoir are filled with 15 cc. 75 per cent sodium diatrizoate and then is connected to the specially designed carbon dioxide injection control unit[7] (figure 3). The injector is set to deliver 100 cc. carbon dioxide under 150 lb. per square inch of pressure and asystole is induced by intravenous acetylcholine. Controlled restoration of the heartbeat, upon completion of the injection and the exposure of the films, is achieved by turning on the pacemaker, as previously described.

Roentgenographic factors. The radiographic exposure is determined according to the size of the patient. The focal film distance is 36 in. Exposures are made upon standard 14 in. by 14 in. films. A 1-mm.-thick Schonander filter is utilized; in single-contrast coronary arteriography, 15 serial films are exposed, both anteroposteriorly and laterally, at the rate of 5 per second for one second and 3 per second for three seconds. In double-contrast coronary arteriography, 10 serial films are exposed in each plane at the rate of 5 per second for two seconds.

DISCUSSION

Carbon dioxide is readily diffusible in blood, especially on the arterial side (carbon dioxide is 20 times more soluble in serum than is air[18]). Upon injection of the double contrast for coronary arteriography, carbon dioxide may be seen in the coronary arteries to dissolve more readily and disappear in a few cardiac cycles without interrupting the coronary circulation or interfering with the pacemaker restoration of the heart beat. Electrocardiographic changes upon injection of double-contrast media without arrest may show slight diastolic prolongation for one beat with no other changes.[7] No neurologic changes have been observed, either clinically or by blood-brain barrier tests in dogs[19] with injections of 5 cc. 75 per cent sodium diatrizoate and up to 50 cc. of carbon dioxide repeated 3 times at two-minute intervals. The fact that this sensitive test remained negative further attests to the safety of the procedure. Moreover, the doses in-

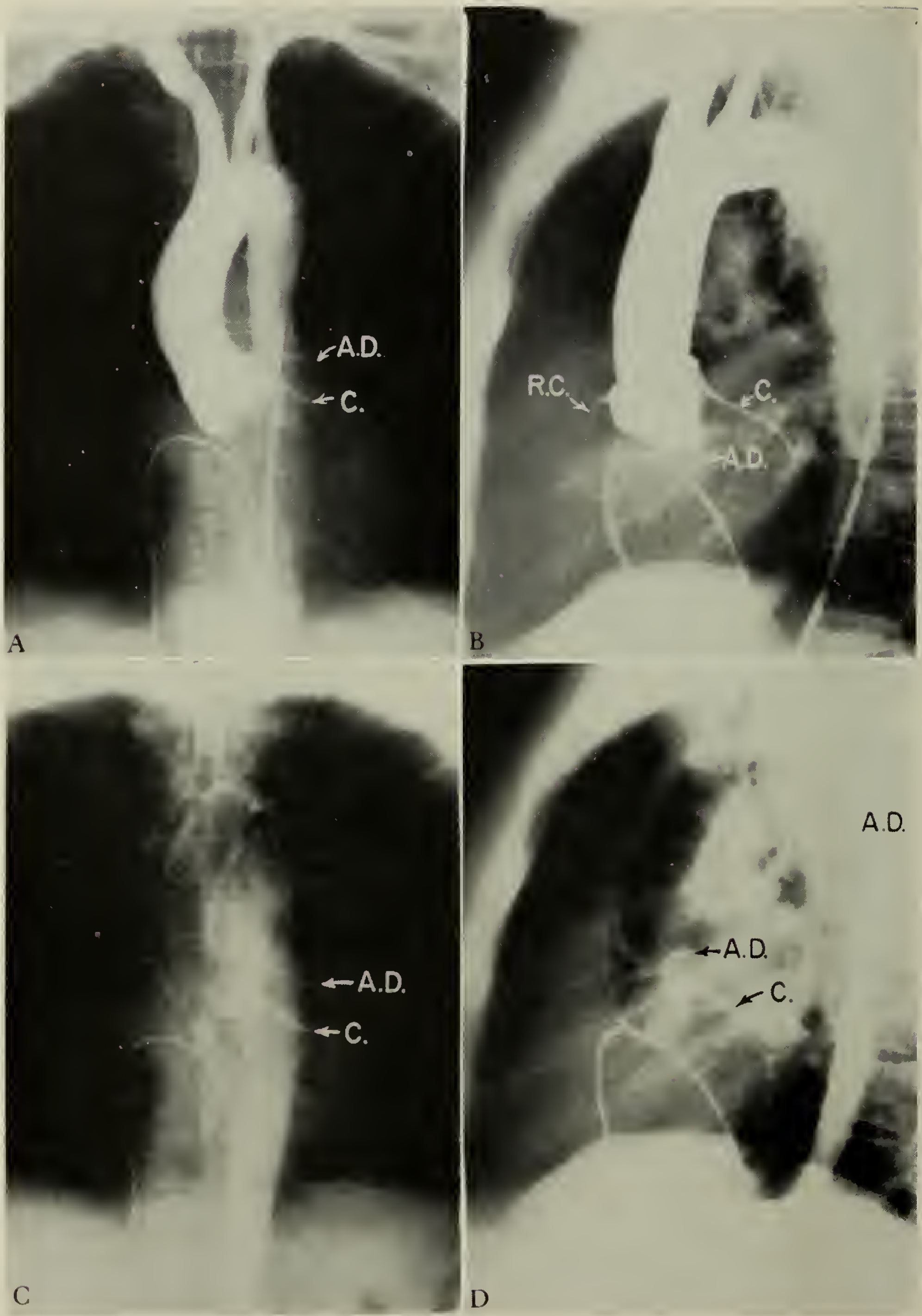

Fig. 4. Single- and double-contrast coronary arteriography in 56-year-old patient. *a* and *b* Anteroposterior and lateral films, No. 5 in series, in single-contrast coronary arteriography. The pacemaker electrode is seen in the right ventricle; 50 mg. acetylcholine were used to induce arrest; 50 cc. of 75 per cent sodium diatrizoate under 140 lb. per square inch of pressure were utilized for injection. Heartbeat was restored by pacemaker stimulation following complete injection. *c* and *d* Anteroposterior and lateral films, No. 5 in series, in double-contrast coronary arteriography of the same patient taken fifteen minutes after the single-contrast coronary arteriography. Injections of 15 cc. of 75 per cent sodium diatrizoate and 100 cc. carbon dioxide under 150 lb. per square inch were utilized.

jected exceeded significantly those needed for good double-contrast visualization.

Double-contrast coronary arteriography may be utilized as an independent procedure or as a supplement to single-contrast coronary arteriography. When serial films are exposed for double-contrast coronary arteriography, as described, the first film of the series gives a picture similar to that obtained with single-contrast coronary arteriography except that, as a lesser amount of sodium diatrizoate is utilized, it is less opaque. The succeeding exposures in the series capture the double-contrast effect as the carbon dioxide follows and splays the sodium diatrizoate injected ahead of it. Valuable information is gained with double-contrast coronary arteriography about the origin and proximal portions of the coronaries, as these are visualized clearly. In single-contrast coronary arteriography, the detailed anatomy of this part of the coronaries is often obscured by superimposition of the white silhouette of the aorta filled with sodium diatrizoate (figure 4).

While the demonstration of the distal ramifications and the collaterals of the coronaries and the so-called "myocardiograms" may lead to better filming by single-contrast coronary arteriography, the detail of the origin and initial portions of the coronaries are best displayed by double-contrast coronary arteriography—an important point in planning direct surgical attack upon coronary artery disease.

Complete obstruction of the coronaries is shown in both single- and double-contrast coronary arteriography when stagnation of the contrast media occurs in the coronaries and remains unchanged in the later films of the series taken as the heart's beat is commenced.

Single-contrast coronary arteriography portrays attenuated, beady, irregular silhouettes as reflections of the arteriosclerotic changes involving the coronaries. With double-contrast coronary arteriography, the extension of such lesions is shown more precisely and directly, giving a photographic effect rather than a mere silhouette.

These technics constitute only a beginning in achieving the goal of methods for an exact measure in vivo of the anatomy and quantitative status of the myocardial circulation.

SUMMARY AND CONCLUSIONS

The importance of an exact preoperative diagnosis of the cardiac or intracardiac anatomic abnormalities present is stressed; when these are multiple, an objective quantitative measure of the contribution of each to the over-all cardiac disability is emphasized as one of the major factors responsible for a successful cardiac reparative operation. This need, recognized by surgeons, has stimulated the rapid development of more precise and reliable methods for cardiac evaluation than were available even a few years ago. These improved diagnostic measures have made possible continued rapid progress in cardiac surgery and indirectly have benefited the entire field of cardiology.

The dramatic advances made in the surgical treatment of congenital and acquired valvular heart disease have served to emphasize and to focus increasing attention upon this nation's No. 1 killer—coronary arteriosclerosis. A large body of information about this disease has accumulated in recent years, but the effective application of this knowledge in bringing about reductions in morbidity and mortality has been hampered by the lack of safe, reliable methods for giving the clinician an exact anatomic assessment of the status of the coronary circulation. Heretofore, such vital information has been available only to the pathologists. Recent work designed to improve the precision of in vivo diagnosis and make such information available to the clinician also has been described. Methods utilizing single- and double-contrast coronary arteriography with acetylcholine asystole and a controlled return of the heart rate using a cardiac pacemaker are outlined.

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Note: This patient, with angina pectoris on effort and a normal resting electrocardiogram, has severe diffuse coronary arteriosclerosis. The right coronary artery (R.C.) is severely narrowed at its origin and is completely occluded about 2 cm. farther out. The left main coronary artery is patent, but its anterior descending (A.D.) branch is completely occluded at a point about one-third of the way along its normal course. Here the circumflex branch (C) is the best major artery but it, too, is occluded completely about one-half way along its normal course. Later films in this series, not shown, indicate a very poor collateral circulation.

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ALCOHOLISM IN BUSINESS and industry can be attacked through company-directed programs designed to help employees stop drinking permanently. Such programs are logical since alcoholism notoriously interferes with profitable business, and an estimated 95% of the 5 million alcoholics in the United States are working members of their communities. Responsibility for carrying out the program can be assigned to the medical or personnel director or similar administrative officer. The company program should be directed at all employees, not just known alcoholics; many persons successfully adjust to the early stages of alcoholism or are able to cover up their status by seeking help in private clinics. Alcoholism should be explained as a disease that develops over fifteen to twenty years and may at first appear to be merely heavy social drinking. Employees must understand that the objectives of the program are identification, rehabilitation, and prevention. Assurance must be given that the alcoholic or problem drinker will not be fired and that management sees alcoholism as a condition requiring understanding and care. Drinkers, nondrinkers, and members of Alcoholics Anonymous within the organization will be interested, and cooperation with them will allow the program to be eventually integrated into plant safety programs, leadership training courses, supervisory sessions, and off-the-job safety programs. In addition the program co-ordinator should know what resources are offered by Alcoholics Anonymous, the National Council on Alcoholism, and the North American Association of Alcoholism Programs and know how these resources can be used to help alcoholics and problem drinkers.

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The Relationship of Orthopedic Surgery to Greater Medicine Today

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THE FATHER of orthopedic surgery, Nicolas Andry, coined the word "orthopaedie" from two Greek words: "orthos," meaning straight or free from deformity, and "pais," a child. In the preface to his monumental book, *L'Orthopaedie,* which was published only a year before his death in 1742, he stated: "Out of these two words I have compounded that of Orthopaedia, to express in one term the Design I purpose, which is to teach the different methods of preventing and correction of deformities of children." As Sir Arthur Keith pointed out, Andry lived in an era when improvement upon nature was a goal to be achieved. Keith says: "In the scope of Orthopaedics, Andry included not only the fashioning of the waist, but the care of the nails and hands, the shaping of the head and nose, the arching of the eyebrows, the reposition of the ears, and also much of that kind of knowledge which in our day has become the stock-in-trade of the beauty specialist, voice producer, and master of deportment."

In spite of such digressions, Andry's teachings made a significant impression upon the medical profession of his time. His instructions were based upon clinical observations rather than anatomic dissections. He stressed the importance of early correction of childhood deformities, most particularly the prevention of deformity, and the need for initial overcorrection in order to attain complete correction of deformity during growth. His principles of correction of deformity are still sustained.

Long before Andry, from earliest recorded medical history, men of medicine have shown specialized interest in trauma to the skeletal structures and their associated soft tissues. Hand-to-hand fighting in the constant wars of ancient times produced many injuries, and it is not surprising that the most obvious injuries, like those to the skeletal system, received much attention. The Hippocratic Corpus, a series of books written during the period between the fourth century B.C. and the first century A.D., are concerned with skeletal trauma and they contain much, pertaining to infirmities, that has been rediscovered in modern times and is now included in the field of orthopedic surgery.

As the influence of Rome superseded that of Greece in the first and second centuries A.D., Galen's research into neuromuscular physiology and anatomy formed the basis for knowledge of muscle function. Another early orthopedist, Paul of Aegina, whose *Epitome* of 7 volumes became the text of medical knowledge during subsequent centuries, contributed much to the knowledge of surgery in general and to orthopedic surgery in particular. He recognized the malleability of soft fracture callus, introduced open osteotomy for malunion of fractures, and advised laminectomy in treatment of traumatic spinal cord compression. His influence and teachings were widely spread among the Arabians and by the Moslem conquest.

The University of Bologna became an orthopedic teaching center during the twelfth century and has remained so. The influence of the Bolognese was particularly felt in the field of orthopedic appliances and braces for they simplified, lightened, and invented with ingenuity.

The Renaissance introduced Ambroise Paré who, in 1564, wrote *Dix Livres de la Chirurgie* in French instead of the customary Latin. This remains a classic in surgical literature and is concerned in great part with orthopedic surgery.

To enumerate even a majority of those who have made significant contributions in orthopedic surgery is not possible here. I have mentioned a few to emphasize the fact that this specialty existed long before the word "orthopedics" was coined. John Hunter, John Hilton, William Little, Guillaume Duchenne, and Hugh Owen Thomas made contributions to the advancement of this specialty in the nineteenth century. During World War I orthopedic surgery became recognized as a specialty which

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included more than the treatment of deformities. The work of Sir Robert Jones, nephew of Hugh Owen Thomas and trained under Thomas' expert guidance, was brought into world-wide prominence by his supervision and care of the wounded during World War I.

The organization, building, and development of orthopedic hospitals and institutions began in the mid-nineteenth century. This was the era which marked the opening of the Hospital for the Ruptured and Crippled and the New York Orthopedic Hospital in New York City and the Rizzoli Institute of Bologna. In the early twentieth century, this move expanded with the establishment of the Hospital for Deformities and Joint Disease in New York (now the Hospital for Joint Diseases), the Shriners Hospitals for Crippled Children, and the state hospitals for crippled children, of which the Gillette Hospital for Crippled Children in St. Paul, Minnesota, was among the first. Later, as interest and attention was drawn to the crippling results of the poliomyelitis epidemics of the 1930s, 1940s, and 1950s, institutions primarily devoted to the care of poliomyelitis were built. The National Foundation for Infantile Paralysis and the Georgia Warm Springs Foundation, with funds provided by donations to the March of Dimes, has promoted research which portends the elimination of poliomyelitis. The partial rehabilitation of the more severely paralyzed patient who requires mechanical aid in breathing has been given impetus by bold and ingenious clinical research at orthopedic institutions like that of Rancho Los Amigos in Los Angeles.

The total care of the crippled individual must include measures of physical therapy and rehabilitation. This once was within the total domain of the orthopedic surgeon, for restoration of function has always been the primary aim of orthopedics. Earlier orthopedic surgeons exhausted every possible means of improving their patients by nonoperative means and their knowledge of modalities then existing, pertaining to improvement of function by bracing, stretching, manipulation, exercise, and apparatus, was profound. While modern orthopedic surgery recognizes the desirability for surgical correction of deformity not amenable to nonoperative correction, the need for a firm foundation of knowledge of physical methods of treating disabilities is recognized and stressed among orthopedic teachers.

ORTHOPEDIC SURGERY AND PHYSICAL MEDICINE

During and immediately after World War II, the need for rehabilitating and retraining the large numbers of severely handicapped war victims became startlingly evident and to meet this need the Baruch Committee on Physical Medicine was formed. Through the efforts of physicians such as Rusk, Krusen, and others, great strides were made in the rehabilitation of the severely crippled patient, particularly the paraplegic and quadriplegic, through the large-scale development of methods of restoring maximal function in such patients in institutions like that founded by Rusk. The main concern of these physicians was the total rehabilitation of the patient, physically, mentally, socially, and vocationally, to the maximal degree commensurate with his abilities.

"Rehabilitation" covers a broad field. It must include surgical correction of deformity, the transplantation of tendons, the repair of nerves, and a large number of other orthopedic surgical procedures. It includes physical therapeutic measures, such as massage, manipulation, exercise, and stretching, and the use of physical agents, such as heat, light, cold, water, and electricity. It includes bracing and the use of prostheses in amputees. It also comprises re-education of the physically handicapped and stimulation of the patient's own abilities to improve his function.

Physicians in all fields of medicine should be vitally interested in rehabilitation, since treatment of a patient should not be considered complete until he is made as "well" as possible. By the nature of the type of disabilities which the orthopedist treats, he falls naturally into a position of leadership in many facets of rehabilitation. The physiatrist is a welcome partner in the role of leadership. Rehabilitative units in general hospitals give their best service to the public when directed by committees composed of many specialized physicians as well as general practitioners, with chairmanship being provided by an orthopedist or a physiatrist, or both.

Teaching institutions where problems of physical therapy and rehabilitation in patients with orthopedic disabilities are resolved through friendly and respectful discussion between orthopedic surgeons and physiatrists, as exemplified by institutions such as Rancho Los Amigos in Los Angeles, California, and the Hartford Hospital in Hartford, Connecticut, stand as beacon lights of cooperative specialization in medicine. Orthopedic surgeons were using physical modalities in helping their patients improve function long before the specialty of physiatry was born. These modalities are an integral part of orthopedic treatment of the patient and must be readily available without additional prescription. To obtain the most complete rehabilitation, the physiatrist needs the orthopedic surgeon and the orthopedist needs the physiatrist's help. Training in orthopedic surgery should include a period of several months spent in departments of physical medicine, and physiatrists would benefit from spending a portion of their training in orthopedic departments.

ORTHOPEDIC SURGERY AND PEDIATRICS

From its inception, orthopedic surgery has been vitally concerned with deformities and crippling conditions of childhood. Because he also treats adults, the orthopedic surgeon is familiar with the final outcome of childhood deformities. He knows that the dysplastic, shallow acetabulum which is so frequently the aftermath of congenital hip dislocation may cause no disability during childhood and adolescence but will inevitably lead to degenerative arthrosis in adult life. He knows the value of early diagnosis and proper treatment of lateral curvatures of the spine and of vertebral osteochondroses. Pediatricians do not have the opportunity to follow their patients into adult life.

A basic philosophy of most pediatric departments is that of treating the whole child and calling for consultative help as the need arises. Pediatric training does not include surgical and nonsurgical correction of deformities. It is not uncommon for orthopedic problems to be delayed in their transit through pediatric departments. It is not uncommon for dysplastic, dystrophic, or metabolic disturbances of bone to remain sequestered in departments of pediatrics although they might be benefited by orthopedic treatment and are needed as teaching material by the orthopedic service.

Before the advent of antibiotics, most orthopedic surgeons felt that acute bone abscess in osteomyelitis and acute septic joints should be opened and drained immediately in accordance with best surgical principles. When antibiotics came into use, it became obvious that many children with acute hematogenous osteomyelitis and even some with early acute septic joints could have their infection aborted and controlled without open surgery. Indeed, for a time, the orthopedic surgeon saw very little of acute bone and joint infections. Now, in recent years, there appears to be an upswing in incidence of both these acute infections. It is not uncommon for the orthopedic surgeon to be called in after the infection has had a prolonged and unresponsive course of antibiotic treatment. Since joint cartilage cannot long tolerate the presence of lytic purulent exudate, this procrastination of joint drainage leads to an unnecessarily high joint morbidity. The preservation of joint cartilage and the abortion of early osteomyelitis can most often be obtained through a judicious mixture of medical and surgical skills.

It must not be forgotten that total care of the disabled child includes all measures of rehabilitation. The orthopedic surgeon and the pediatrician must work closely in order that the goal of total care can be achieved.

ORTHOPEDIC SURGERY AND TRAUMA

Orthopedic surgery has always been intimately concerned with the skeletal aspects of trauma. In the total care of the patient with multiple injuries, the orthopedic surgeon has been a prominent member of the trauma team, and in many areas he is its captain. Ideally, the orthopedic surgeon of today should have in his background of training a knowledge of blood vessel repair and nerve repair in the extremities. The laboratory animal should be used freely to develop the orthopedic resident's technical skill in blood vessel surgery. The resident in training must also develop diagnostic acumen in thoracic and abdominal visceral injuries and head injuries. In nearly every orthopedic training center today, sound knowledge of physiology, biochemistry, fluid and electrolyte balance, pathology, and anatomy are all given adequate stress, either in a designated period of concentrated study or on a continuing basis throughout training.

The orthopedic surgeon rightly feels that his background of training and experience particularly qualifies him to direct and supervise the treatment of fractures and dislocations. While it is true that many general surgeons have treated fractures in a most expert manner and have made significant contributions to the teaching of fracture management, it is also true that most general surgeons, whose training has included a considerable experience in fractures, have lost interest in fracture treatment after entering private practice. The orthopedic surgeon, even with an equal amount of training in the care of fractures, continues his intense interest in the skeletal structures with which he is in daily contact. His knowledge of fracture management will progressively develop with his practice.

The trauma team should therefore consist of those most expert in the care and management of each segment of the total problem. Relegation of priority of treatment of the traumatized patient must be established at once through exercise of good judgment and respectful consultation.

The teaching of fractures and dislocations in medical schools and in training centers should be the responsibility of the orthopedic surgeon. There should be no subterfuge by which the general surgeon accepts the direction of the orthopedist in the care and management of fractures without at the same time relegating to him full control and responsibility for their care. The chief resident on a fracture service should be an orthopedic surgeon who supervises and acquaints the general surgical resident with the management of fractures. The orthopedic resident learns from his general surgery colleague the care of many other aspects of trauma.

THE TRAINING OF THE ORTHOPEDIC SURGEON

At the present time, some controversy exists in regard to the total training of the orthopedic surgeon. No one doubts the value of one or two or even three years spent in a good general surgical service before the start of the orthopedic residency. No one doubts the value of a year or more of intensive study of internal medicine, physical medicine, pediatrics, or neurology. In recognition of this, The American Board of Orthopedic Surgery accepts a year of any one of these specialties in lieu of a fourth year in orthopedic surgery or of a year in general surgery. It must be recognized that a majority of physicians wish to complete the training period in their chosen specialty in the shortest period of time permitted. The limited income provided for a medical fellow in training, plus the fact that nearly all such fellows have assumed family responsibilities during medical school years, creates an understandable desire to begin private practice at the earliest possible time.

Full-time academic teachers are needed in orthopedic surgery in ever-increasing numbers. The background of training of these men should include a much broader training in the basic sciences, general surgery, and research than is needed by the average orthopedist engaged in private practice. However, clinical research is of equal importance to laboratory research, and academic orthopedic surgeons also need sound clinical knowledge, judgment, and ability. All aspects of orthopedic training must be covered in a good training program and the teaching staff should include those clinically oriented as well as those whose investigative minds lead them to the research laboratory. Such programs also benefit greatly from the use of a part-time clinical teaching staff.

It does not matter who does the work so long as it is well done. Experienced orthopedic surgeons remove lumbar disk protrusions and repair severed peripheral nerves with facility equal to that of the neurosurgeon. General surgeons oriented toward function and having skill and knowledge of the hand may perform acute and reconstructive hand surgery as well as the orthopedic surgeon. Special interests must be developed to attain progress in all fields of medicine. These special interests sometimes develop into subspecialization; orthopedic surgeons, thus, may become specialists and authorities on clubfeet, congenital extremity anomalies and amputations, congenital dislocation of the hip, scoliosis, and surgery of the hand.

Orthopedic surgery has come of age and is no longer a stepchild of general surgery. Departments of surgery sympathetic toward their divisions of orthopedic surgery have encouraged their growth. In some areas the reverse has been true. Growth and development of orthopedic surgery has been most rapid and productive where independent departmental status has been granted. Most orthopedists who are vitally concerned in furthering the progress of orthopedic surgery will work and hope for the time when it will attain an independent departmental status in all teaching centers.

A Concept of the Role of Neurosurgery

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EVEN THOUGH neurosurgery is a comparatively new area of study and investigation, its precepts date back over fifty years; they result from the work of such men as Sir Victor Horsley, Harvey Cushing, Charles Frazier, Otfrid Foerster, and Sir Hugh Cairns. Later, Walter Dandy, Max Peet, Howard Naffziger, Alfred Adson, Geoffrey Jefferson, and a host of others made valuable contributions. But the enthusiastic development of this area of medicine did not stop there; recent advances are at an equal or even more rapid rate. This report will cover only those aspects with which the Division of Neurosurgery at the University of Minnesota has had a direct or very close relationship. Such a review may help to reflect on the past several decades the accomplishments of neurosurgery at large. Those persons acquainted with neurosurgery will appreciate that these represent only a small portion of the total effect of this specialty on medicine.

BONE REGENERATION

The Division of Neurosurgery at the University of Minnesota was formed in July 1937, with Dr. William T. Peyton assigned as the director. At that time it was a rather small surgical service and, in large part, the problems confronted were related to infectious diseases (brain abscess, osteomyelitis, and meningitis). Interest was aroused in the problem of bone regeneration, especially as it related to osteomyelitis. At that time the accepted, and unquestionably the most proper, form of therapy was to excise widely the involved bone. This left a depression in the contour of the skull—a rather unpleasant defect since osteomyelitis usually was secondary to sinusitis and involved the frontal bone. The observation was made, however, that over a period of years this bone regenerated so that a cranioplasty for cosmetic reasons was not always necessary. This is contrary to the situation that exists after normal bone has been removed in doing a craniectomy. The question that arose was whether the bone regeneration was from the periosteum, the underlying dura, or both. In the adult treated for osteomyelitis, the overlying periosteum was gently raised by the spreading infection; it was not traumatized, as occurs in the removal of normal bone. In fact, the periosteum becomes hyperplastic. By the simple investigative technic of removing the periosteum over one-half the area of excised osteomyelitic bone, bone regeneration occurred beneath the remaining hyperplastic periosteum but not beneath the area where the periosteum had been removed. The obvious deduction was that periosteum in an adult is a necessary component for skull bone regeneration. Another outgrowth of this interest in bone regeneration involved a new technic for treatment of craniosynostosis. It was well recognized at that time that in an infant skull, bone growth was from the bone edge, along the suture line. In the pathologic condition of craniosynostosis the bones fuse prematurely, thereby preventing proper expansion of the skull. This resulted in an abnormally shaped skull; the shape was dependent upon which suture lines fused and how early fusion occurred. One of the accepted methods of treatment at that time was to excise the suture line, hoping that expansion of the skull would take place before refusion of the bone edges. However, with this technic alone, the bone soon reunited; the benefits derived were limited. The concept was conceived in this clinic that wrapping the bone edge with tantalum foil (polyethylene film is now used) would prevent such early reunion.[1] This technic has stood the test of time for the past twenty years.

CEREBRAL EDEMA

Shortly after World War II, the problem of cerebral edema was investigated. The brain swelling that occurs in head injuries and around neoplasms, abscesses, and thrombotic and hemorrhagic areas, is important in the production of permanent neurologic deficits or even in the death of patients. Seldom is the space-occupying lesion, itself, of sufficient size to block the normal channels of cerebrospinal fluid circula-

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tion; rather, it is the associated edema that is so damaging. In the investigation of this problem, methods were devised to produce edema in experimental animals. These included various forms of direct trauma to the brain, production of sub- and extradural masses, intracerebral implantation of inert materials which take up fluid and expand, experimental brain abscesses, transplanted brain tumors, and the intravascular injection of agents which alter the normal vascular permeability. Basically, the brain differs from the rest of the body in having a barrier to the passage of many substances from the blood into the brain substance or into the cerebrospinal fluid. This barrier is broken down and becomes permeable under the conditions just mentioned. Sodium fluorescein can be used to assess the breakdown since it does not, under normal conditions, penetrate into the central nervous system but does go into areas of altered permeability. This method of localizing pathologic areas at the time of surgery was first used in this clinic in 1947.[2] Further extension of this concept of differential uptake was the tagging of sodium fluorescein with a radioactive isotope and then scanning the head with a counter capable of detecting intracranial concentrations of the isotope.[3] With this technic, brain lesions can be located.[4] The first use of this technic for localizing brain lesions was in 1948.[5,6] Subsequently, this general concept has been utilized in medicine, in general, and is now used for detection of pathologic conditions in many other organs of the body, including the kidney, liver, and gastrointestinal tract. In addition, these same technics have been recently utilized by investigators in neurophysiology, neuroanatomy, and chemistry. Further interest in the problem of cerebral edema led to the initiation of the use of the glucocorticoids for its control.[7] This has gained considerable recognition as a means of reducing edema over long periods of time.

It has been difficult and unrealistic to relate neuroanatomic and neurophysiologic investigations done in experimental animals directly to human beings. Fortunately, more proper investigations have been made possible by the development of a research program into the clinical problems of epilepsy. As a result of this program, technics have been devised by which cerebral ablations of measured size and area can be accomplished in human beings. Patients who have had such ablations for the control of epilepsy can then be evaluated from anatomic and physiologic, as well as behavioral, points of view.[8,9] It soon became apparent that in selected cases the convulsive disorder could be controlled, thereby eliminating a most disabling clinical condition.[10] In addition,[11] it also confirmed tentative conclusions of animal experimentation that the frontal lobes are of primary importance in thinking capacity and emotional tone[12,13] but perhaps not so important in the deeply seated changes in affect, fugue states, and many areas of psychopathic behavior. The latter seemed more appropriately to involve the region of the temporal lobe and the so-called "limbic systems."[14] As a result of accomplishing stepwise excisions of quite large areas of cerebral tissue, it also became apparent that the thalamus was not a unilateral primary receptive area. After unilateral excision of the thalamus in human beings, as well as all structures cephalad to the thalamus, the sensory modalities of pain, temperature, touch, and position are still retained,[15] probably because the remaining structures are able to assume these functions if the excised hemisphere and ganglia are involved at an early age, that is, a "taking over" of these functions seems to occur. Following resections in these patients there was also less motor loss than anticipated.[16]

HEMORRHAGE

The problem of spontaneous intracranial hemorrhage has always perplexed physicians. Hemorrhage in an older individual—one with advanced cerebrovascular sclerosis—was explainable, but what about the large number with hemorrhage at a younger age? What about the patient with recurrent severe neuralgia or migraine who suffered a spontaneous subarachnoid hemorrhage? What was the etiology? Are all "small strokes," in younger as well as older individuals, due to cerebrovascular occlusion? The answers to these questions became evident with the acceptance of angiography for the clinical study of the extra- and intracranial vascular systems. A technic developed in this clinic to make this a safer procedure was the retrograde brachial angiogram.[17] With this method of filling the cervical as well as the intracranial vertebral and carotid systems, the dangers inherent in direct puncture of the potentially involved vessel were diminished.[18] It became possible to demonstrate safely not only intracranial aneurysms and arteriovenous malformations but also extracranial vascular partial occlusions. Further interest in this problem led to the clarification of the clinical problem of vascular malformations associated with the great vein of Galen.[19] A method was devised for handling surgically the aneurysms of the anterior communicating artery so that the mortality and morbidity rates were greatly reduced.[20] It was also shown that the proper time for operation on intracranial aneurysms is before the third week following the initial hemorrhage.[21] Incidence of recurrent hemorrhages is comparatively low before that time but is greatly increased beginning in the third week, probably due to hemolysis of the blood around the aneurysm which weakens the clot.

RELIEF OF INTRACTABLE PAIN

Over many years the problem of the surgical relief of intractable pain in patients with cancer has demanded the interest of those in this Division of Neurosurgery. During this time the advantages of the use of spinothalamic tractotomy in the high cervical area (C-2) was demonstrated.[22] All painful impulses, regardless of source, traverse up the spinothalamic pathway and not up the posterior column, as was previously believed true; especially was this believed of painful impulses arising deep in muscle and tendon and in the testicles. It was also shown that, by differentially cutting the spinothalamic tract, one could obtain analgesia and thermanesthesia, differentially and quite precisely, over specified areas of the body.[23] The sensory ascending pathways were delineated.[24,25]

By the use of stereotactic technics, it has become possible to place recording devices, as well as to produce destructive lesions, deep within the brain of human beings. This has been helpful in delineating the source of electric impulses deep within the brain in patients with convulsive disorders and has also made possible the surgical excision of these areas, with control of the disabling seizures. With these same technics, destructive lesions have been made in patients with parkinsonism, athetotic states, and dystonias.[26] At least temporary alleviation has been achieved. In the laboratory, stereotactic technics have permitted, among other new physiologic information,[27] a further knowledge and understanding of the relationship between the hypothalamic structures and ulcer diatheses.[28,29]

Many other problems related to medicine in general have been of interest either in the neurosurgical laboratory or clinically. These include the extirpation of the pituitary gland in patients with hormone-sensitive neoplasms,[30] the development of an instrument for emptying the urinary bladder by an electronic device,[31] the application of ultrasound to neurosurgical diagnoses, investigations of the central nervous system as related to hormone output and circadian rhythms, and other research problems. Each of these has had a specific influence although, perhaps, they are not individually of tremendous importance. But, over-all, it is likely that, by working away at the problems at hand, an influence for the improvement of medicine in general will result.

EDUCATION

It does not seem justifiable to close this report without a mention of the teaching concepts of this surgical specialty. All data to which medical students and residents in training are exposed must be related to the problem at hand. To teach unrelated, not immediately applicable or understandable material is a waste of the student's time. Unrelated material is inert, not useful, and quickly forgotten. If a person is to read and think critically in later life, emphasis during the formative years of training must be placed, not on unrelated, disconnected detail but, rather, on promoting the general principles underlying that career. In addition, an emphasis on the imparting of imaginativeness is imperative. Lack of these qualities in a physician has profound consequences. A man can graduate with a vast amount of information about modern medical practice, yet, if he is not habituated to reasoning and studying critically throughout his medical life, the quality of his practice steadily deteriorates. The question encountered concerns how this can be avoided. First, the way in which a university functions in the preparation of a medical career is by promoting the imaginative consideration of the various general principles underlying that career. If students can pass into the period of technical apprenticeship, or practice, with their minds already adept in connecting details with general principles, the routine then receives a meaning. The primary reason for the existence of universities is not to be found either in the information conveyed to students or in the mere opportunities for research afforded by the members of the faculty. Both these functions can be carried out much more cheaply apart from these very expensive institutions. So far as the mere imparting of information is concerned, no university has had any such justification for existence since the popularization of printing in the fifteenth century. The justification for the existence of a university is that it can preserve a connection between dispersal of knowledge and the ability to use it creatively. The concept of the teaching in the Division of Neurosurgery is that education is the acquisition of the art of imaginative utilization of information. In this way, a better physician or surgeon is developed.

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ACUTE BACTERIAL ENDOCARDITIS most often affects elderly persons, and men are affected more frequently than women. The disease may be fatal in as many as 96 per cent of patients and should be suspected in persons with fever of undetermined origin. The commonest infecting organisms are coagulase-positive staphylococci. Fever, tachycardia, and heart murmurs are the most frequent symptoms. Others are pyuria, proteinuria, hematuria, and a white cell count in excess of 15,000 per cubic millimeter. Associated diseases, such as cancer, may mask the symptoms. The commonest site of the endocardial lesion is the mitral valve, and abscesses, pneumonia, and congestive heart failure often are associated. About one-third of patients have acquired valvular or congenital heart disease. Increased incidence of the disease in older persons may be due to debilitating illness and diagnostic and operative procedures, such as urethral catheterization, cystoscopy, and cancer operations. Prophylactic administration of antibiotics is valuable two days before, two days after, and on the day of skin incision or mucous membrane manipulation in patients with rheumatic or congenital heart disease. In dental manipulation, procaine or oral phenoxymethyl penicillin potassium is suitable. Streptomycin should be administered during performance of urinary tract procedures.

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Full-Time and Clinical Teachers in the Surgical Training and Teaching Program

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IN RECENT YEARS, many more full-time clinical teachers have been employed in medical schools and university hospitals so that department heads now have come to rely less on part-time faculty. Although the virtues of this system are debated by some, informed medical educators believe that, as the scope of the various disciplines of medicine has broadened, this arrangement is proving to be the most satisfactory.

Nevertheless, several recent trends in medical education suggest that there will be continuing opportunity, both for the practicing specialist to participate in medical education and for the university to utilize profitably many of these able clinical teachers. The development of community hospitals in small towns through the agency of Hill-Burton funds and the availability of well-trained specialists in these same localities have eliminated a large source of ward patients who in the past were referred to university centers. Local welfare agencies now find that these patients can receive adequate treatment locally and at a lower cost in many instances. Many now can obtain adequate medical care from private sources through prepaid medical insurance. As a result fewer patients are available for clinical teaching in the university hospital, and it appears that universities will need to rely more and more on municipal and select voluntary hospitals for their teaching material. Also, the increasing trend toward specialization and the demand for trained specialists have resulted in a mushrooming of residency training programs. In addition to the university centers, municipal and voluntary hospitals wtih charity beds provide the best potential for adequate training at graduate levels. Another factor is that many of the practicing specialists today are, themselves, the product of excellent training programs and, if available and interested, are fully qualified to make real contributions to clinical teaching.

Municipal hospitals with university affiliation serve as the best example of a workable system. The training program is under the direction of one or more members of the university staff who devote full-time service to the hospital. Their prime function is teaching the medical student, intern, and surgical resident. In addition, they give over-all supervision to the program, arrange and schedule formal teaching sessions and conferences, see that proper standards of surgical care are maintained, assist and supervise house staff in operations, and determine that standards of preoperative and postoperative care are adequate and that records are properly kept. The full-time staff should also provide inspiration and seek financial support for maintaining a surgical research program. Such an ancillary program in the laboratory provides the surgical resident with opportunities to gain insight into the problems of research and investigation, make original observations, acquire surgical skill from operations upon animals, and develop a critical eye for evaluation of the surgical literature which he will continue to read throughout his career. Although graduate surgical programs in municipal hospitals are, and should properly be, oriented to training of surgeons who will be practitioners, it is, at times, in the research laboratory that the surgical fellow will discover his real talents and he will proceed therefrom into an academic career.

Where does the clinical teacher fit into such a program? Weekly conferences offer members of the part-time clinical staff, in turn, opportunities to present their experiences with interesting and difficult surgical problems and to inform residents and students on the proper management of difficult surgical cases. Here the staff will formulate future policies for handling spe-

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cific surgical problems. Here the medical student will have an opportunity to hear the various philosophies and doctrines of schools of surgery from those members of the staff who have been trained in other localities. If the special talents and interests of individual surgeons are kept in mind in preparing lectures and rounds for medical students, it should be possible to introduce them to many clinical problems which they will not have seen on the university hospital service.

In the capacity of attending surgeon on the surgical service, the clinical teacher is most effective if he is able to find a regular time each week to make rounds with residents, interns, and medical students. Surgical fellows, who are progressively doing more difficult surgical procedures, need close supervision in the operating room if they are to be properly trained. The task of teaching and assisting the resident in the operating room often is tedious and time consuming but it is an integral and necessary part of surgical education. The attending surgeon rapidly learns the capability of his resident and will recognize which surgical procedures require his presence.

In many municipal hospitals the patient census of the surgical subspecialties will be small and the attending part-time staff will provide most or all of the direction for the clinical and teaching program. The relation of the university representative to this staff will be largely administrative. He will provide residents and interns for these services and integrate the formal teaching sessions of the subspecialties into the over-all teaching program. It is his responsibility to see that the teaching program of the subspecialties is organized and that it meets the required standards.

In addition to the objective of instructing residents, interns, and students, the municipal hospital should provide an atmosphere and program of continuing education for the staff, as well. The full-time staff member should avail himself of every opportunity to obtain distinguished guest speakers. Conference material should be informative to the staff as well as the student. The department should pioneer new technics and procedures, and the laboratory facilities should be available to staff members who are interested in research. Thereby the standards of surgical practice will be maintained at the highest possible level.

Mutual understanding between full- and part-time staff members is essential for success. The educational director must remember that the practicing surgeon has responsibilities in other hospitals as well as the demands of his own practice. Teaching sessions, conferences, and ward rounds should be scheduled with these considerations in mind. The clinical teacher, on the other hand, must realize that medical teaching is time consuming, both in preparation and presentation, and that the various teaching exercises must occur regularly to be effective. If the potentialities and limitations of such a program are realized, it is possible for the surgical staffs of nonuniversity hospitals to make real contributions to graduate and undergraduate medical education.

LIGATION of the main and accessory pancreatic ducts can alleviate chronic relapsing pancreatitis. The resultant pancreatic atrophy destroys exocrine activity while preserving endocrine function. Pancreatic edema, congestion, and focal necrosis are produced in dogs by intermittent ductal obstruction with small glass rods fragmented within the major ducts. Ligation six to eight weeks later causes atrophy of most of the gland and is well tolerated, with no reactivated inflammation. Some regenerative nodules are seen at autopsy, but edema and occasional areas of necrosis are the only apparent signs of residual inflammation.

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Contributions of Urology to the Practice of Medicine

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In assessing the contributions of urology to the practice of medicine in general, it is difficult to draw a line between contributions of widespread applicability to other fields and those of a technical nature which are of interest primarily to urologists.

Urology as a surgical specialty really owes its existence to the perfection of the cystoscope, as we now know it, by Nitze, the physician, and Leiter, the instrument maker, in 1879. It is of passing interest that the instrument was not really practicable until its makers adapted to it Thomas Edison's carbon filament incandescent light bulb. Previously, a white-hot platinum wire furnished illumination; this had an obvious disadvantage.

The cystoscope opened entirely new vistas in the recognition of disorders of the prostate, bladder, and, to a very limited extent, kidneys. Study of the kidneys was limited at this time to observation of the gross appearance of urine expelled from the ureteral orifices. By 1904, ureteral catheters were available. Urine could be collected separately from each kidney and relative functions estimated with moderate accuracy by the use of indigo carmine (Voelcker and Joseph).

In the meantime, Roentgen's x-ray, announced in 1895, had been applied to the urinary tract with only indifferent success because of technical inadequacies in the equipment. By 1906, however, these had been sufficiently overcome so that Voelcker and von Lichtenberg were able to introduce retrograde pyelograms, which permitted the accurate preoperative identification of surgical lesions of the kidneys and ureters. Braasch did much to expand the usefulness of this method. Retrograde delineation of the urethra and bladder naturally followed.

Retrograde pyelography, while exceedingly useful, was cumbersome and, for the patient, unpleasant. It had occurred to Rowntree, as early as 1923, that visualization of the urinary tract ought to be feasible following ingestion or injection of iodine-containing compounds, but no satisfactory ones were available. In 1929, however, Swick and von Lichtenberg were able, by means of the intravenous injection of an organic iodide called uroselectan, to visualize the whole interior of the urinary tract in a fairly satisfactory manner. The organic iodides have since been improved, so that excretory urography has made available to the profession an extraordinarily useful diagnostic tool.

While aortography (renal arteriography) was conceived and applied in 1929 by Dos Santos, the Portuguese surgeon, it was never widely applied until 1953, when the urologists Smith and Evans demonstrated that it could be used safely if certain precautions were observed. Other urologists, Nelson and Doss, played a role in popularizing it. Until lately, its usefulness in urology lay chiefly in the way of helping to differentiate renal neoplasms from cysts.

Aortography was promptly embraced by the vascular surgeons and radiologists and has since become an essential diagnostic measure in obstructive disease of the renal arteries with hypertension.

While it was the internist, Weiss, who first suggested that unilateral cicatricial pyelonephritis could cause hypertension, and the physiologist, Homer Smith, who warned in 1948 that this idea was leading to the needless sacrifice of many kidneys, it was Braasch who, finally, in 1952, established precise contraindications for nephrectomy in cicatricial pyelonephritis with hypertension.

In the meantime, the vascular surgeons, and, occasionally, urologists (Poutasse and Leadbetter), were undertaking to cure certain cases of hypertension by widening or replacing narrowed renal arteries. Howard, an internist, and Stamey, a urologist, have emphasized the importance of differential function tests in identifying the ischemic kidney as a cause of hypertension. Much has been said in this connection about the im-

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portance of measuring the size of the kidneys in the excretory urogram but, actually, this is often difficult or impossible to do with any accuracy in the average film. A nephrogram is often necessary. Winter (1961) prefers the radioactive renogram using sodium o-iodohippurate (Hippuran) I^{131} as a screening test for the detection of renal ischemia in hypertension.

There is not a great deal of progress to report from the urologic point of view in determining the etiology of urinary lithiasis, although the problem is being studied in many clinics. One can say with assurance that prolonged immobilization, infection with urea splitters, metabolic disturbances such as gout, cystinuria, xanthinuria, and hypercalcinuria from a variety of causes account for the vast majority of cases of renal calculi, but that is about all.

While urologists have participated in renal transplantation and have made many experimental studies thereon, it has been primarily the work of immunologists and vascular surgeons.

The chief contribution of urology to the subject of neoplasms has been Huggins' fundamental observation that a high proportion of prostatic cancers can be influenced favorably, at least for a time, by removing the source of testicular androgen, whether by castration or by the administration of estrogen. While it had long been known that a few relapsing breast cancers could be caused to regress temporarily by castration, Huggins was the first to demonstrate systematically and scientifically that the behavior of a neoplasm could be influenced by altering its hormonal environment.

After the advent of cortisone, this led him to try the effect of adrenalectomy upon relapsing prostatic cancer but with rather disappointing results. Hypophysectomy is not much more promising. Both of these methods seek to remove or suppress the source of adrenal androgens, but the relapsing tumors are presumably largely androgen-independent. The basic reasoning behind Huggins' work has led to many far-reaching studies by him and by many others. The chief result so far has been the demonstration that certain relapsing cancers of the breast will regress temporarily, sometimes for fairly long periods, during the administration of estrogens or androgens and after castration and subsequent removal of the adrenals or pituitary.

Flocks has been impressed with the effects of injecting radioactive colloidal into the carcinomatous prostate; his results undoubtedly are applicable to neoplasms of other organs.

It has been demonstrated that one of the many causes of the fibrinolytic state is carcinoma of the prostate (Tagnon, Schulmar, and Whitmore, 1953).

Cahill contributed substantially to our general knowledge of malfunctions of the adrenal glands, due both to hyperplasia and to neoplasms, as well as of the surgery of the adrenals.

Much has been written about the disappearance of pulmonary metastases after removal of parenchymal renal neoplasms, but there is no instance in which the nature of the pulmonary lesion has been verified histologically, so one always wonders about a diagnostic error. Most of the rather scanty literature on prolonged survival after removal of a presumably solitary metastasis has come from the general surgeons. It seems to me that the secret of success here is to pick, unwittingly, a tumor having what Scott has called a "low biological potential." Many urologists have, of course, drawn attention to the protean manifestations of hypernephroma.

The role of the urologist in chemotherapy of infections has been, in the main, a subsidiary one. He has undertaken to evaluate, clinically, antibiotics supplied by others, although Lattimer has pretty well standardized the current chemotherapy of urogenital tuberculosis.

The results of chemotherapy of neoplasms of the male urogenital system and of the female urinary tract have been generally unimpressive, despite reported trials with the kidney, bladder, prostate (apart from androgen control therapy), and testis. However, Li, Whitmore, and others have reported some benefit in metastatic or recurrent testicular neoplasms with combinations of actinomycin D, chlorambucil, and methotrexate; Wildermuth, Haltiwanger, and Friedgood have each observed regression of metastases (but not cure) from the use of nitrofurazone (Furacin).

The fact that the mortality of prostatic operations has diminished from around 20 per cent in the 1920s to less than 1 per cent now (in well-performed transurethral resections) is naturally of interest to all physicians.

Urologists (Prather and Lich) have played a role, and should play an increasing one, in pointing out that, contrary to the doctrines of Kass and others, it is not the catheter which is evil but, rather, the manner of its use. It seems likely, too, that innocent patients are being labeled "pyelonephritic" and condemned to lifelong antibacterial therapy without any real evidence that the pyuria and bacteriuria are renal in origin. Pathologists have been guilty, as Kimmelstiel has pointed out, of labeling as pyelonephritis small accumulations of round cells often due to something else.

Contemporary Medical Teaching and the Need for More Effective Communication

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EFFECTIVE TEACHING depends on good communication between instructor and pupil. From that premise, this corollary follows: The more imperfect the conveyance, the less acceptable the resultant state of understanding. On superficial analysis, the widespread availability of journals, texts, monographs, and facsimiles of original articles, as well as narrated film topics, would seem to leave little to be desired for achieving a ready and workable exchange of information. In fact, however, this very plethora of material discourages, confuses, and, at times, overwhelms the man who seeks knowledge. The quiet sound of truth is lost in the raucous noise of any number of irresponsible, discordant opinions.

An extended search through this mass of information, sound and otherwise, may eventually sharpen the neophyte's capacity for critical reading and listening, that is, if he does not become disenchanted by the enormity of his task and abandon it in favor of "digests," in which other experts are quite willing to do his thinking.

Even for the diligent scholar, however, there remain problems. For a rapidly reading, surefooted veteran of the short cuts through an explosively expanding scientific literature, the matter of the most efficient use of his limited amount of time grows steadily more difficult. The need appears clear to him for the development and practice of an accepted nomenclature for subject titling, improved indexing, and the establishment of a shorter phase between publication of an article and its listing. For easier, more certain, and more rapid retrieval of useful information from today's myriad of publications, he wants a workable procedure for conversion of this knowledge to computer tape. Then, too, it is self-evident that we will need adequate, well-located centers for housing these libraries thus created, in response to the needs of the next requirement—collation and retrieval of scientific data—before we obtain a semisatisfactory solution to this demanding dilemma.

For the beginner in science another major problem exists. He must learn the vocabulary and the idiom of the particular discipline or disciplines under study. One of the delightful aspects of much reading and hopefully learning is to accomplish this by a leisurely perusal of the subject matter as revealed from the historical beginnings. Regrettably, the limited time available from other obligations frequently denies him this luxury, and, indeed, a substantial amount of effort can be expended in sifting a few facts from a profusion of impressions. All persons at this stage in their scientific development are in genuine need of basic concepts with which to work out an initial personal understanding of that particular set of problems.

A solution, in some schools, has been to prepare outlines, or manuals of a comparable form, which have been synthesized, presumably, either by one or several individuals quite familiar with that topic. At times unfortunately it is done rather by people merely fulfilling an assignment! The almost certain consequence of adoption of that plan has been to discourage the student's initiative. He rarely turns thereafter to the library with its original sources of confirmatory or disproving opinion and facts. In particular, our student is prone to skip the lengthier original sources from which the outline material might have been prepared, and, inevitably, thereafter his capacity for critical judgment remains hypoplastic. He is likely to carry this handicap into his years of continued study after graduation. Thus, whenever a desire arises later in life for more knowledge about a new problem, he is liable to rely on the publications disbursed by drug houses or comparable one-sided views on controversial issues, rather than to attempt a critical evaluation of the problem personally.

A few years ago, Donald Ferguson, my associate at that time, and I, having identified this sequence several times in students (and I suppose in ourselves as well), sought to overcome

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this tendency through the development of prepared reading lists which were selected from original works. Each set would cover a particular topic. We elected to call the compilations "Source Books," and the title today still seems reasonably appropriate.

The concept was simple: A person with an interest and background of experience in a given area, for example, cancer of the stomach, would select not more than 10 articles likely to provide the student with the soundest introduction and basis for a modestly thorough understanding of that particular problem. Whenever feasible, 1 or 2 articles of historical value were to be included. Each of the papers selected was then reproduced or typed from the original, including a thoughtful translation whenever this could be well done. Among the papers selected, those which were deemed to be the most important were starred in order to help the reader who had even less time available to devote to the acquisition of a modest familiarity with that particular topic. Also, a supplemental bibliography of additional worthwhile articles was appended for the individual having more time and diligence. Each collection was then bound in a loose-leaf holder and placed on a reserved shelf in the library for daily, overnight, or week-end use. Each of these series of collected papers was to be re-examined at four- to six-month intervals for suitable additions or deletions to insure that, as superior publications became available upon that particular topic, each would be included as a replacement for an earlier choice.

Both at local and national gatherings, warm to enthusiastic verbal responses were accorded the idea; however, the actual support for this concept has been more modest. Despite Dr. Ferguson's efforts, this trial balloon has failed to reach and sustain an orbit. Therefore, the idea may not have been sound, or, perhaps, effective changes likely to update our teaching are more worried about than practiced. Meanwhile, the problem of how best to help our young scientific scholar to familiarize himself with today's massive scientific literary output continues to grow. He sorely needs wise counsel on the most efficient use of his time for the sound maturation of the critical capacity for observing, listening, and reading which will lead to superior judgments. For, above all, we must seek thereby to provide an intellectual climate which will arouse and excite his curiosity about the endless variety of problems which he is encountering and for which solution is essential to the progress of medicine.

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ANDROGENIC HORMONE administered in massive doses over long periods induces significant erythropoiesis in some patients with anemia caused by bone marrow suppression. Bone marrow analysis and determinations of red cell volume aid evaluation of response. Reticulocytosis may be immediate, but definite increases in red cell volume may not occur in less than two months. Dilution of red cells by increased plasma volume may cause an apparent lack of response by creating a disparity between hemoglobin concentration and total circulating hemoglobin. Androgenic hormone should not be used indiscriminately, since effective dosage can induce polycythemia, hirsutism, acne, hoarseness, increased libido, and fluid retention. Massive doses of testosterone propionate or fluoxymesterone were given to 43 patients with anemia unresponsive to standard therapy. Twelve showed significant increases in hemoglobin or hematocrit values and restoration of bone marrow erythrocytic cellularity; all were able to discontinue transfusions. Some improvement occurred in a number of other patients.

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The Roles of Research and Basic Science in the Training of Surgeons

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The relatively vague position allotted to research in the training of a surgeon today is surprising. Accrediting agencies recognize that experience in research is of value but they tend to make such experience permissive rather than basic. Many believe that research and teaching are somehow naturally antagonistic, so that increased interest and activity in the experimental laboratory are possible only at the expense of a decline in sound clinical teaching and experience. Many still harbor the image of the experimentalist as a person naturally disinterested in, or incapable of, practical patient care or clinical teaching. Certainly there have been, and will continue to be, individuals who fit this description. Apart from the fact that this is the exception rather than the rule, the important point is that we should consider what is necessary in the make-up of our teachers and training programs in surgery and why. The need for introspection is evident, considering the revolutionary changes occuring in medical science.

LESSONS FROM THE PAST

The attitudes of doubt about the value of research experience have more of a geographic than a historic basis. One quickly grasps, from a perusal of medical and surgical history, that the basis of modern surgical knowledge and technic has been laid by those individuals known not only as surgeons but as scientific investigators. For evidence one has only to turn to the lives of such revered surgeons as John Hunter and William S. Halsted.

For example, Harvey Cushing, the famous brain surgeon, in a eulogy commemorating the bicentennial of Hunter's birth, said: "What is known as the Hunterian method revolutionized surgery . . . Hunter was the first to teach the science of surgery as Paré two hundred years before had advanced the art."[1]

Ernest Gray,[2] the biographer, says of Hunter: "John Hunter was a true biologist. As a practicing surgeon the constant problem in his mind was, 'What heals my patient's wounds? What is vitality? or life?' and it drove him on to prosecute a life-long exhausting search with his knife through the tissues of animals and plants."

Consider this evaluation of Halsted by Dr. W. H. Welch:[3] " . . . I recognized that Halsted combined, in a degree rarely matched, the interests of the practical surgeon with those of the experimental biologist in his fundamental studies of the processes of wound-healing and of the handling of wounds, as well as of surgical injuries and diseases in general. With all of his important contributions to practical surgery, it is this genuine scientific attitude of mind and mode of approach to the solution of surgical problems which give the characteristic stamp to Halsted's thinking and work."

Or consider Prof. René Leriche's (Paris) impressions of Halsted following a visit to Baltimore: "The method of Halsted rests primarily on the biological idea, for those in Baltimore are the surgical inheritors of the spirit of Claude Bernard. It is taught there that surgery should be above all an experimental science. It is on experiment that surgical pathology should lean constantly if it is to progress, and on the other hand experiment should precede and follow every new operative attempt. Surgery is only applied biology. . . . In Baltimore the fusion of surgery and physiology is intimate. The education of the students is above all biological, and the future surgeons are trained in a laboratory of experimental surgery in contact with living beings and not in a dissecting room."

These glimpses from the past serve to remind us that the molders of modern surgery placed the experimental laboratory in the forefront of teaching and surgical training. It is true that their concepts are still evident in our present-day surgical training programs. What is lacking is a general recognition of the need for an extensive overhauling of our training programs necessitated by the tremendous outburst of advances in scientific knowledge and methodology

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in recent years. The surgeon has contributed substantially to these advances directly, through his pioneering efforts in various areas in answer to urgent clinical problems and, indirectly, by the activities stimulated by the new technics themselves and problems arising out of these studies. The surgeon undoubtedly will continue to be the individual who must find the solutions for his clinical problems.

THE GENERAL PROBLEM

The problem before us is the surgeon's evergrowing struggle to maintain competence in both the clinical field and a major basic science for the purposes of pursuing scientific research and continuing to apply all advances in knowledge to the diagnosis and treatment of patients as rapidly as new knowledge becomes available. An increasingly large part of a surgeon's time in the clinical area is dependent on a firm footing in basic science; more attention must be paid to providing this background. Similarly, the development and use of many advanced technics in surgery, such as the pump-oxygenator, the artificial kidney, and regional perfusion for cancer chemotherapy, not to mention the incipient area of homotransplantation surgery, require far more fundamental knowledge than is provided in most surgical training programs.

One might visualize the future surgeon in the role of a skilled mechanic if the challenge of maintaining mastery of the science of medicine is not adequately met. Whereas the challenge falls most heavily upon those choosing the academic life, to a lesser degree the challenge also must be acknowledged by the surgeon who enters into practice if he hopes to maintain the present position of rapid and effective application of new diagnostic and therapeutic advances. It seems inevitable and right that the surgeon must evolve in the direction of being a medical scientist with certain specialized therapeutic skills.

The basic problem, then, is to provide and maintain better scientific training. The predominant stress placed on scientific training in no wise is intended to ignore or devaluate the importance of art in surgery. The many elements of this art, including skill, sympathy, human interest, and compassion, must be cherished and developed to the fullest in the surgical trainee. Nevertheless, the fundamental advances in medical knowledge and therapy must come largely from the application of science to the problems at hand.

PROPOSALS FOR IMPROVED TRAINING

What should be done to obtain a better scientific training for future surgeons or, for that matter, clinicians in general? First, the prospective medical student should be provided with a first-class training in science. This can be done without lengthening medical training or radically diminishing education in arts, letters, and humanities. The basic defect is usually that of an inadequate training in mathematics, the keystone of all science. With a firm background from the high school and with further mathematical training in college, the medical student is equipped to take the undiluted courses in physics and chemistry that are required of others headed for a career in science, including those who will enter the practice of engineering. This would be followed by a considerable improvement in the amount and complexity of material which could be presented by the basic science departments in medical school with the expectation that the student would have better understanding and retention as a result of his improved background. During the clinical years in medical school much benefit would accrue from greater efforts at correlation and explanation of clinical problems in terms of fundamental mechanisms. Here is where the need for extensive knowledge and training of clinical teachers in basic science becomes evident. In this regard, it is interesting to speculate on the advantages that might result if the biochemist and the physiologist were to play a role in clinical teaching similar to that which the pathologist has assumed over the years. The experience might prove mutually beneficial in view of the profound personal motivation and exceptional insight into biologic processes offered by direct observation of the experiments of nature as seen in human disease. At the residency level, time and facilities must be provided to permit an uncontested consolidation and elaboration of medical scientific knowledge and methodology and, hopefully, at least an introduction to the scientific method as exemplified by research. Finally, it is worthwhile to consider the need for continuing education in medical science for the practicing surgeon as well as the university surgeon. For the former, this might conceivably take the form of refresher courses in basic science which would be aimed at the practicing surgeon and supplemented with selected reading lists. For the academician, time should be made available, at intervals more frequent than the traditional sabbatical leave, to permit renewal and enhancement of scientific knowledge independent of the direct, most pressing needs of teaching and research.

For the surgeon planning an academic career, the training program should be a minimum of three years of research and basic science experience and three years of clinical surgery. The exact assignment of time for undertaking the various sequences is somewhat difficult to generalize, as it is affected by the many needs of the training programs and the individuals concerned. Usually, however, the selection of individuals who appear promising for such a career will follow a period of one or more years of clinical training. Similarly the division of time during the three years spent in basic science and research will depend on individual needs but would generally consist of two years primarily in experimental surgery and one year primarily in a basic science department. Considerable overlap and continuity should be planned so that there would be some time devoted to systematic study and participation in selected conferences or seminars in basic science during the period devoted to experimental surgery. This sort of arrangement has existed in some surgical training programs for many years with great success.[4]

Surgical trainees aiming at a career in private practice should devote eighteen months to basic science or research, or both, plus three years of clinical training. Participation in research activities should be actively encouraged but not insisted upon. For those not interested in or suited for research experience, training at the graduate level in pathology, physiology, and biochemistry should permit the mastery of those fundamentals needed for the intelligent use of diagnostic tests and the effective management of pre- and postoperative care. It also should provide a reasonably sound footing to permit continuing postgraduate education and refreshment in the basic sciences after entry into practice.

One of the problems in general surgical training has been the need to provide some training in all or most of the surgical subspecialties. Unfortunately, this is commonly at the expense of any untrammeled period devoted to the strengthening and elaboration of basic scientific knowledge and research experience. Ways should be sought to provide clinical experience and training in those areas of the subspecialties which are of fundamental importance to the general surgeon without the necessity for spending a fixed period of time in all of them. Perhaps this could be accomplished by limiting the selection of subspecialty experience with supplemental training through clinical conferences, ward rounds, and selected participation in operative procedures to make up for those areas missed on regular rotation.

THE NEED TO ATTRACT THE BEST STUDENTS

A number of corollary problems will be intensified by the proposed changes in emphasis which must be seriously grappled with to avoid falling short of the mark. In the past decade, the number of top students applying for admission to medical school has decreased.[5] Part of this decline is probably due to the increased appeal of careers in other scientific areas subsequent to public interest in atomic energy and the space effort, but undoubtedly the long, expensive period of training is a factor influencing entry of some candidates into other fields. Much can be done to improve matters by providing senior high school and freshman college students with first-hand opportunities to see the range of activities and career goals open to the physician. Much can be done to prepare and advise students once a long-range career goal is set. Even more important, real action is needed to relieve the financial burden of preparing for a career in medicine. This may take the form of a larger number of liberal scholarships in medical school and realistic salaries for interns and residents. Greater recognition must be given to the problem created by the necessity for additional years of training. Perhaps this problem could be met by regular, substantial increments in salary with each year of training and by placing the trainee on the hospital staff during his senior year with attendant increase in salary. That these improvements in the financial situation of trainees will be resisted by those who must provide the funds is inevitable, but such objections must be overcome. As Bennett[6] has pointed out: "The real revolution in medical education is the greatly expanded medical and premedical student research activity, fortified by comparable expansion in postdoctoral and graduate student research. . . . This revolution does not depend on curricular changes, except for the freeing of elective time when needed. This revolution does depend on full-time facilities of dedicated, well-trained, and imaginative investigators. It depends on a culture which places a high value on health, on knowledge related to health, and on scientific research and scholarship."

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James M. Hayes, M.D.

A Personal Tribute

J. ARTHUR MYERS, M.D.

Minneapolis

When a physician has participated actively and for a considerable period in the evolution of one or more medical organizations and has been an outstanding benefactor of humanity, the intervening years should not allow us to forget his accomplishments and contributions and to acknowledge our great indebtedness to him. The life of James M. Hayes is richly deserving of such recognition, and a brief recounting of his many goodnesses can be read with profit by those who have forgotten him or may not have known him.

EDUCATION

He was born in Milville, Minnesota, in 1880. In due time, he graduated from Lake City High School and entered Carleton College. In addition to doing splendid scholastic work, he played on the football team for four years and was captain in 1902 and 1903. He was elected class president in 1904, his senior year, and was then made permanent president. Throughout the remainder of his life, no one could converse with him long without hearing him praise his Alma Mater. He always considered it a privilege to be able to serve the college in any possible capacity.

At Carleton, he became well qualified to teach science and was employed in that capacity by the Albert Lea High School, where he was also the athletic coach. In 1906, he enrolled in the medical school at the University of Minnesota. He was popular not only among the students but also with the faculty. After receiving his medical degree in 1910, he became the first intern at the Elliott Memorial Hospital, which had just been constructed on the University campus. The next year, he began general practice at Browns Valley, Minnesota, and continued there until 1915, when he began a five-year fellowship in surgery at the Mayo Clinic. Already the Mayo Foundation was a part of the graduate school of the University of Minnesota.

When Base Hospital No. 26 was organized for World War I, Dr. Hayes went overseas with others from the clinic. One of the important milestones of his life was service as Captain in the United States Medical Corps as a member of the Casual Operating Team 13 in France from 1917 to 1919. After discharge from military service on April 22, 1919, he continued his fellowship at the clinic and received the degree of Master of Science in Surgery from the University of Minnesota in 1921. In 1920, while still at the Mayo Clinic, Dr. Hayes and Miss Catherine Nightingale, a nurse at the clinic, were married. Thereafter, Mrs. Hayes contributed significantly to his success.

MEDICAL CAREER

In 1921, he established an office for the practice of surgery in Minneapolis. The long years of preparation, his fine personality, his understanding of people, and his surgical technics, combined with his trustworthiness in every respect, drew a large clientele, which he maintained throughout the years. In 1956, he retired from practice in Minneapolis but soon resumed practice in California.

Dr. Hayes held membership in the usual medical organizations in addition to the Western Surgical Association, American Goiter Association, Minneapolis Academy of Medicine, and the American College of Surgeons. For several years, he was chairman of the Minnesota branch of the American College of Surgeons. He was a member of the founders' group of the American Board of Surgery (1937). He served as president of the Minnesota State Medical Association, Minneapolis Surgical Society, and Mayo Clinic Alumni Association. Dr. Hayes held honorary membership in the Knights of Columbus. He was also a member of the Economics Club of Minneapolis, the Minikahda Club, and the Kiwanis Club.

Among the special honors that were bestowed upon him were Legion of Honor, Kiwanis Club; Certificate of Merit, University of Minnesota School of Medicine; Distinguished Service Medal, Minnesota State Medical Association; and Alumni Achievement Award, Carleton College.

From 1930 to 1959, Dr. Hayes was a member of the Editorial Board of THE JOURNAL-LANCET. He practically never missed board meetings during this period of almost three decades, and his advice and contributions were always valuable. He was author of 23 published articles, mostly on surgical subjects.

Dr. Hayes was an excellent teacher. In 1921, he was appointed assistant in surgery at the University of Minnesota school of medicine. In due time, he was promoted to instructor, then assistant professor and, in 1937, clinical associate professor. He became clinical associate professor emeritus in 1950. For ten years, he devoted much time to the Margaret Barry Settlement House Clinic.

STATE MEDICAL ASSOCIATION

From 1924 to 1937, when Dr. E. A. Meyerding was executive secretary of the Minnesota State Medical Association and the State Tuberculosis and Health Association, Dr. Hayes devoted a large amount of time to the state medical association. He worked closely with Dr. Herman Johnson, chairman of the Legislative Committee, and participated in numerous programs throughout the state, speaking before nearly all the 34 county and district medical societies. In 1928, he was appointed a member of the Committee on Public Policy in Legislation and continued on this committee until 1944. In 1934, he was elected councilor of the sixth district, and, in the same year, he became chairman of the Committee on Industrial Health. That year, he also served on a special committee to study medical needs in isolated communities. He was chairman of the Industrial Health Committee in 1937 and of the Interprofessional Relations Committee in 1940.

He was elected president of the Minnesota State Medical Association for the year 1938 and later served as chairman and then as a member of the Committee on University Relations. In 1940, he became alternate delegate to the American Medical Association and was delegate from 1941 to 1943.

Dr. Hayes made a thorough study of medicine's problems and its achievements in Minnesota and his president's address, in 1938, summarized his findings. This was published in full in the August 20, 1938, issue of the *Journal of the American Medical Association*. Reprints were extensively requested and widely distributed throughout the country. He initiated a movement in the AMA to stimulate the states to determine and handle their own medical needs.

During his term as president, and with his active assistance and support, the state headquarters of the medical association were moved to the Lowry Medical Arts Building in St. Paul and an enlarged program of public health education was launched. The program has continued and expanded along the lines established at that time.

When Dr. E. A. Meyerding resigned as executive secretary of the state medical association in 1937, Mr. R. R. Rosell was elected to that position. Dr. Hayes' activity with the state association continued, and Mr. Rosell recently wrote of him as follows:

> Dr. Hayes was unique in many respects, in my extensive experience of medical association officials. Like nearly all of them, he took his responsibilities with great seriousness and he would willingly interrupt a busy surgical practice to attend a conference, make a speech, or go on an extended trip, if it would advance the interests of the association.
>
> But he was, above all, forthright and outspoken, and he seldom sacrificed straight talk to tactfulness and official sugar-coating. For that reason, he did make occasional enemies. But the enmities were generally short-lived, and his colleagues admired and respected him for his fearlessness and his devotion to their interests.
>
> In the history of most organizations, there are times when forthright action is imperative. The Minnesota State Medical Association has good reason to be thankful for the courage and straightforwardness of Dr. Hayes in just such a situation. They were available to it at a turning point in the association's history. It was largely through his good offices that the independence of the association, with its own headquarters and program, was established. He should be remembered long and affectionately, in my opinion, among all of the fine men who have held the office of president of the association.

PERSONAL RECOLLECTIONS

My acquaintance with Dr. Hayes began in 1921, when we opened an office for private practice together. This intimate association continued for ten years. Throughout the decade, there was never an unpleasant word between us. His integrity and forthrightness made a deep impression upon me and others who knew him. This also applied to his ever-increasing clientele. After occupying the same office for ten years, Dr. Hayes, with a group of physicians, moved to the newly constructed Medical Arts Building. However, our close friendship continued for the remainder of his life.

If space permitted, it would be so pleasing to write at great length about our relationships and Dr. Hayes' innumerable kindnesses to our family over such a long time. We traveled over the state of Minnesota for several years in the late 1920's and 1930's on a team of 4 or 5 physicians which met with county and district medical societies and various other groups of health workers. Often the team left the Twin Cities about noon and arrived at its destination in time for dinner. An address or so was presented to a nonmedical group immediately after dinner, and still later 2 or 3 addresses were given before the regular medical society meeting. These trips usually were made by automobile, and sometimes it was after break of day when the team arrived home. On other occasions, the trips would extend over two or three days, meeting with as many lay groups and medical societies. When such trips were being arranged, Dr. Hayes was always in demand. He was an excellent speaker, having participated extensively in debating as a student at Carleton College and having coached the Albert Lea High School debating team. He had a pleasing voice, spoke just loudly enough to be heard throughout the meeting places, avoided extraneous tangential excursions, speaking straight to the point, used simple English so all could understand, made his points concisely, and drew logical conclusions, all within a brief period. When he had finished, audiences were disappointed; they wanted to hear more.

In the late afternoon of July 30, 1928, I was called in consultation to a village at such a distance as to require my being gone all night and part of the next day. About 1:00 o'clock that night, one of our daughters had severe abdominal symptoms, and Dr. Hayes was called. He made a diagnosis of appendicitis, took her in his own car to the hospital, and promptly did the appendectomy.

On May 3, 1958, Dr. Hayes met me at the airport in Los Angeles. We drove to his home in Monrovia where Mrs. Hayes joined us, and soon we were off to his brother, Dr. Edward W. Hayes, to spend the night at his mountain home on Old Baldy. What an evening of reminiscences, of delicious food and sleeping with a rushing mountain stream just beneath the window, the water originating from a glacier in the mountain only a short distance above us. The next evening we met in Santa Monica with a large group, composed mainly of Hollywood actors and producers, to promote a fund-raising campaign for construction and equipment of a new Mary Knoll Sanatorium. The sanatorium had been established in 1930, and Dr. Edward W. Hayes had always been medical director; Dr. Edward W. Hayes, Jr., a prominent chest surgeon, had recently become an active staff member. As we parted that night, the firm grasp of Jim's hand and the glow of his eyes re-emphasized his long-abiding trustworthiness and friendship.

I saw Dr. Hayes again for only a few minutes in Los Angeles in May 1960. After he moved to California in 1956, we carried on a good deal of correspondence. On November 3, 1960, he wrote his last letter of considerable length in longhand, which I shall always especially cherish.

On January 9, 1961, Dr. Hayes conducted his practice as usual and had his schedule arranged for the next day. When he retired that evening, he was apparently in good health, but he died in his sleep during the night. In only six more days, he would have been 81 years old.

Although the sudden death was a shock to his relatives and friends, it was not an occasion for mourning. He had had a full life, which he greatly enjoyed and which was devoted primarily to beneficence, still giving himself to others through the last day and planning to be helpful to others the following day. His death apparently was without pain or suffering and was only a continuation of his sleep.

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GERSHOM J. THOMPSON, PANAYOTIS P. KELALIS, and DANIEL C. CONNOLLY: Transurethral prostatic resection after myocardial infarction. J.A.M.A. 182:908-911, 1962.

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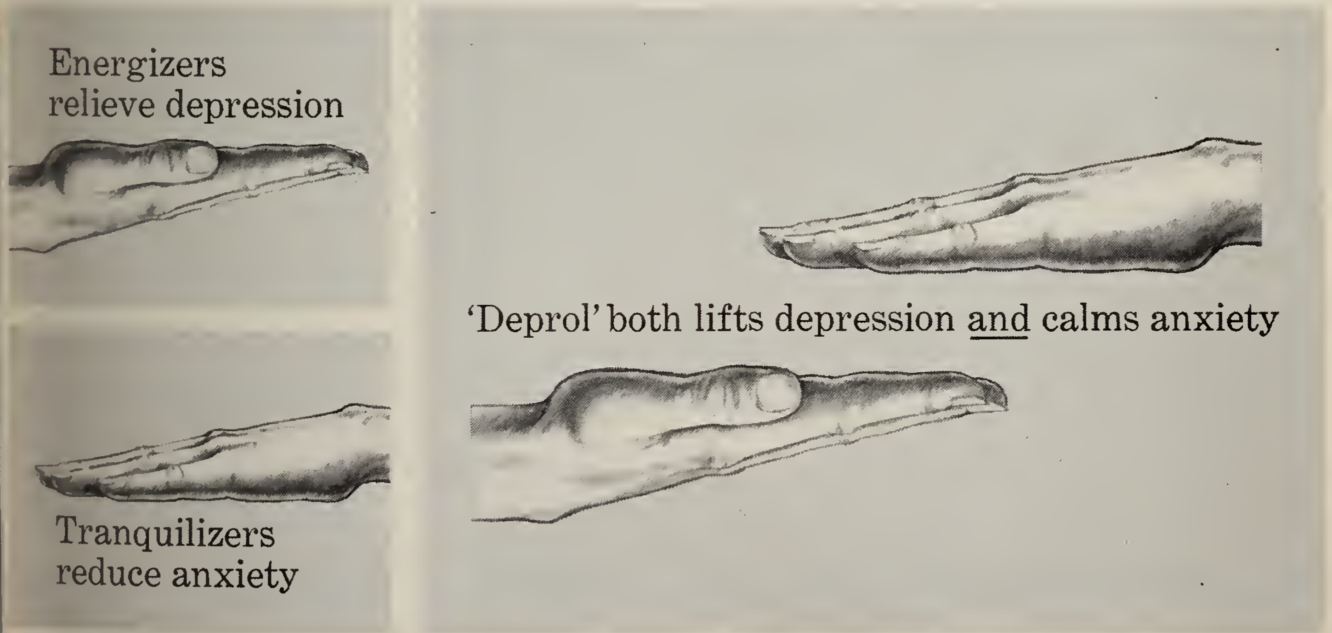
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Book Reviews . . .

An Introduction to Geriatric Medicine

BERNARD ISAACS, M.D., *editor, 1962. Glasgow, Scotland: Foresthall Hospital. 80 pages. Copies available free of charge from Dr. Isaacs.*

Papers delivered at a postgraduate course in geriatric medicine at the University of Glasgow, Scotland, are presented in this volume. It is, in truth, a symposium on geriatrics given by a distinguished group of physicians and social workers. The papers discuss in a systematic manner the many problems involved among the elderly, be they social, economic, or medical.

The first portion of the volume deals mainly with the organization and administration of a geriatric service and contains papers on such subjects as the role of governmental authorities, the work of welfare committees, and the problems of retirement.

The second, or clinical, portion treats in easily understood terms such items as cerebrovascular disease, pressure sores, anemia in the elderly, psychiatric syndromes in the elderly, physical rehabilitation, and occupational therapy. The papers in this section, in most instances, have appended references which render a useful service to anyone particularly interested in those fields.

The material in this collection of papers is clearly presented in a pleasing style. Any student or physician interested in topics dealing with the socioeconomic and clinical aspects of the geriatric problem would do well to peruse the contents of this symposium.

REUBEN F. ERICKSON, M.D.
Minneapolis

Preventive Pediatrics: Child Health and Development

PAUL A. HARPER, *1962. New York City: Appleton-Century-Crofts. 798 pages. Illustrated. $14.95.*

This extremely comprehensive work provides practical clinical information as well as basic research concerning the health supervision of growing children, adolescents, and young adults. Special emphasis is placed on maternal and child service at local, state, and federal levels, which is, or should be, available for the individual or the community as a whole.

The author has selected and discussed common problems of pediatric practice which are predictable and hence can be met with anticipation. The answers to these common problems in our society become quite complex and often are found in quite unrelated pamphlets, journals, and texts. The author brings together the various services available for the particular patient situation and amplifies the physician's role as co-ordinator. The child who is hard of hearing, has difficulty with speech, or is mentally retarded represents examples of problems which are reviewed.

Not only are the physical organic features of the handicapped child discussed, but the child's acceptance of his problem, his family, and his society are stressed. Community and health services which are available and render the epileptic, spastic, or rheumatic child a functional member of his society are important contributions.

Community health services available for newborn, preschool, and school children in such fields as orthopedics, nutrition, immunization, and communicable disease are discussed. Representative programs such as that of the U.C.L.A. Child Amputee Prosthetic Project are presented. Information about government services is also available.

Such common problems as juvenile delinquency and out-of-wedlock births are clearly presented. A helpful and comprehensive section on adoption and adoption agencies and the physician's role in this situation is included.

The entire work is well written and easily read with adequate tables, graphs, and figures. Excellent bibliographies at frequent intervals make this book a text or reference work of value to the physician interested in pediatrics and maternal and child health.

ALVIN W. PATRICK, M.D.
Oklahoma City

Essentials of Dermatology

NORMAN TOBIAS, M.D., *sixth edition, 1963. Philadelphia: J. B. Lippincott, 538 pages. Illustrated. $10.00.*

This book is one of several new condensed, revised textbooks of dermatology which serve as excellent references for medical students and physicians in general practice. There are 228 clear black and white and 11 colored illustrations. The opening chapter surveys embryology, anatomy, and physiology of the skin and also discusses the cutaneous manifestations of systemic disease. The second chapter describes the principles of dermatologic therapy. One unusual feature of this text is that a description of related nursing care appears at the end of each chapter.

The various diseases are grouped together in closely related entities in the next 31 chapters. Each dermatosis is described in simple terms regarding clinical symptoms, character of the eruption, etiology, usual course of the disease, pathology, and differential diagnosis. The suggested therapy is conventional and up to the present standards. Practical references are made, where necessary, to various medical periodicals and treatises for a more detailed discussion of that subject.

This is a simplified, yet well-illustrated and abbreviated textbook for a quick reference in dermatology.

F. T. BECKER, M.D.
Duluth, Minnesota

A Manual for Psychiatric Case Study

KARL A. MENNINGER, MD., *with* MARTIN MAYMAN, PH.D., *and* PAUL W. PRUYSER, PH.D., *second revised edition, 1962. New York City: Grune & Stratton. 189 pages. $5.50.*

This manual had its beginnings in 1919 as a set of procedures for the Boston Psychopathic Hospital. Since that time it has been revised and altered by the group at the Menninger Clinic and now is a remarkably palatable essence of sound clinical advice.

(Continued on page 21A)

(Continued from page 18A)

It is certainly more than just another guide for psychiatric residents. Although the manual contains little that is either novel or controversial, it makes rewarding reading even for an experienced psychiatrist; it will call to mind many things that he has long taken for granted but which are far from intuitive to the newcomer. These truths are often so aptly put that one is tempted to borrow exact quotes for use in teaching nurses, aids, and residents. Typical examples are: "Short cuts in psychiatric history-taking belong to the experienced—who do not often use them" and "Part of tact is the ability to describe a person as he sees himself."

For the beginner this is an ideal primer. Much of the advice is deceptively simple, yet the depth of understanding lying behind it should not be underestimated. For example, with respect to handling paranoid patients, the book advises: ". . . we must, at least at first, accept the patient's own evaluation of his experiences. If he tells us people are reading his mind, instead of asking, 'Are you sure they are reading your mind?' or, 'What makes you think they are reading your mind?', the physician might word his question more tactfully, 'Why should they read your mind?' and, 'Who are they?'."

Today when the literature is flooded by pompous volumes parading the most tenuous theories as accomplished facts or else dressing banal observations in bewildering technical gibberish, the simplicity and clarity of this little book is like a breath of fresh air.

ENOCH CALLAWAY III, M.D.
San Francisco

Synopsis of Pediatrics

JAMES G. HUGHES, M.D., *1963. St. Louis: C. V. Mosby Co. 1,031 pages. Illustrated. $9.85.*

This "little" volume, designed as a synopsis of pediatrics, truly fulfills the requirement of a precise summary of the complex specialty of pediatrics. More than 20 contributors describe, in their own literary style, various pediatric problems by systems in a rather clear and concise manner.

Although it was recognized that this synopsis was somewhat hypertrophic, the fact remains that it is a rather complete volume on the child and his growth and development. Much information relative to diseases of the pediatric age group also is included.

The contents in the first 8 chapters describe, in detail, the importance of pediatrics and its contribution to the normal growth and development from infancy through childhood. In an orderly manner, growth and development, psychologic abnormalities, and mental retardation are discussed. The importance of development, as well as neurologic disorders, is adequately stressed in view of the recent emphasis and interest in this important phase of pediatric practice. This is not to say that such things as immunization, nutrition, accidents, and common fluid and electrolyte problems as well as the important fundamental mechanisms associated with growth in normal and sick children are not adequately covered.

Although the style, as a whole, represents some 20 contributors, a certain conformity is detected in most of the presentations. The figures in some of the section are extremely well done, while, as usual, the reproductions of films are not especially satisfactory.

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(Continued on page 22A)

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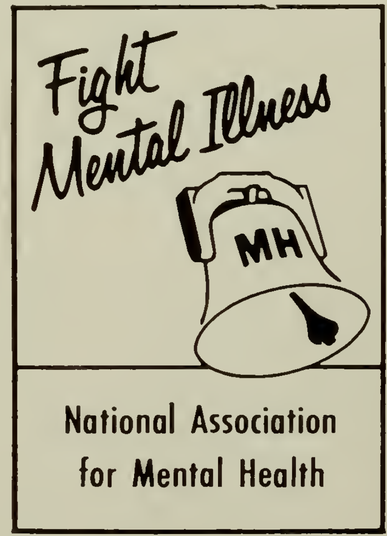

(Continued from page 21A)

ease process and the organ involved is a fine improvement for student formulation.

In all, the volume consists of 938 pages with orthopedic, surgical, and neurologic specialties adequately covered. An appendix of 60 pages includes tables on pediatric dosages, laboratory data, microbiologic technics, and information on fluid and electrolyte estimation.

This handy, attractive blue-covered book will be extremely valuable to medical students, interns, and residents. It is not intended to supplement texts and is truly a book that, in spite of its 4.5-cm. thickness, is as short as one can compose with the new advances in pediatrics.

J. T. JABBOUR, M.D.
Oklahoma City

Handbook of Pharmacology: The Actions and Uses of Drugs

WINDSOR C. CUTTING, M.D., *1962. New York: Appleton-Century-Crofts. 643 pages. Illustrated. $5.95.*

Pharmacology has become so detailed and intricate a discipline that its textbooks are becoming unwieldy. Undoubtedly, only experts would wish to use the encyclopedic kinds of textbook that are now current. To meet the need of practical members of the health professions for convenient pharmacologic reference sources, short, condensed epitomies of pharmacology are appearing. Dr. Windsor Cutting, with his long experience and wisdom, has produced an admirable outline of pharmacology that should be extremely useful in a practical way to all members of the health professions.

This volume gives the essential details on currently used drugs of all types. The chemical structures are shown, the actions are briefly outlined, pharmacologic information is indicated, toxicity is outlined, and uses are suggested. In each instance, preparations and dosages are described.

One can immediately recognize that this is a useful volume. On the other hand, it could be greatly increased in usefulness by just a few simple changes. In the first place, the volume might be more satisfactorily organized with respect to the vast amount of detail that it covers. Unfortunately, there is no satisfactory agreed-upon arrangement of pharmacologic information. Often I have proposed that it be organized on the basis of the chief uses to which drugs are put in the health professions: (1) for the diagnosis of disease, (2) for the prevention of disease, (3) for the cure of disease, (4) for the alleviation of the symptoms of disease, and (5) for the promotion of optimum health. This is a relatively logical organization and would make sense to practical physicians who want to get information rapidly and are ordinarily confused by the haphazard arrangement of pharmacology texts.

Dr. Cutting's introductory discussion on the actions of drugs is too brief. He might have given more general information on the principles involved in the absorption, metabolism, and excretion of drugs. He might have indicated something on the general principles of the relationships between dosage and effect, and he might have discussed the significance of time-concentration relations.

On the other hand, he has clearly differentiated between pharmacologic actions of drugs and the mechanisms (on integrated organs and individuals at molecular levels) by which these over-all actions are produced.

Altogether, the volume is a useful and handy one. it is warmly recommended as the most satisfactory outline of pharmacology now available.

CHAUNCEY D. LEAKE
San Francisco

The Health of Older People

ETHEL SHANAS, *1962. Cambridge: Harvard University Press. 250 pages. $6.00.*

In conducting this "social survey," persons 65 or over who were living outside of institutions, as well as their close friends and relatives, were interviewed on a nationwide basis. An additional series of interviews were conducted with a cross-section of adults who were questioned about family responsibility for older persons.

Mrs. Shanas, a research associate in the Department of Sociology at the University of Chicago, carried out the extensive survey with the assistance of personnel from the National Opinion Research Center and Johns Hopkins University.

Living arrangements, families, medical care and insurance, employment, and income of older persons are covered in the book's 9 chapters. Public views on the needs of older persons, as well as an account of the "very sick," are also described. Four appendices include the questionnaires used for interviews, definitions and explanations, "methodology," and other reports and papers on the survey.

Mrs. Shanas has arrived at the following conclusions: (1) Older persons dislike medical care assistance for psychologic, rather than financial, reasons. Most elderly persons pay their own medical expenses; however, the survey indicates that only half can meet "substantial charges" from their own resources. (2) They are not isolated from their families, either socially or physically, but they do want to be financially independent. (3) Of every 10 adult Americans with a living parent, 3 were contributing to their financial support. (4) The "American public believes that old age and ill health are synonymous." However, the American stereotype is not validated by the survey. "Some people 65 years and older are sick, infirm and indigent," according to the author, "but most are functioning well physically and mentally. These people look first to themselves and their own resources, and then to the programs of the federal government for the means by which they may live out their lives in dignity and with self-respect."

The Health of Older People will be an invaluable reference to the physician, research specialist, psychologist, nurse, or social worker.

HANS A. ILLING, PH.D.
Beverly Hills, California

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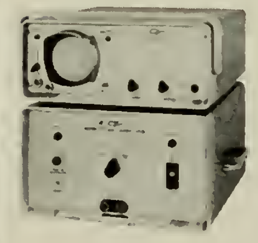

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News Briefs . . .

North Dakota

DR. WELLDE W. FREY will leave Drayton to fill a resident staff position in the department of radiology at the University of North Dakota School of Medicine. He is associated in Drayton with Dr. William Meredith, who will be joined by Dr. Wilfrid A. Pinsonneault, now practicing at Stephen, Minnesota. Dr. Frey is a graduate of the University of Louisville School of Medicine.

* * * *

DR. ROBERT MCGREGOR, instructor in biochemistry at the University of North Dakota School of Medicine, has been awarded a $27,030 research grant by the National Institutes of Health for investigation of cancer of the kidney. Dr. McGregor received his Ph.D. degree from Baylor University, Houston. Recently he has investigated biochemical changes that occur in the tissues of mice given milk containing viruses known to cause breast cancer.

* * * *

DR. JOHN L. FUMERTON, a pediatrician from Nanaimo, British Columbia, has joined the Medical Arts Clinic in Minot. Dr. Fumerton is a graduate of the University of Manitoba Faculty of Medicine in Winnipeg, and he interned at St. Boniface Hospital, Manitoba. He practiced at the Campbell Clinic, Lethbridge, Alberta, during 1955 to 1957 and afterwards became a resident in pediatrics at Children's Hospital, Halifax, Nova Scotia. He later served as graduate assistant in pediatrics at University of Wisconsin Hospital, Madison.

* * * *

DR. JEROME O'HEARN has joined the otolaryngology department of the Fargo Clinic. He is a graduate of the University of Minnesota Medical School and received specialty training at the Veterans Administration Center, Wood, Wisconsin, and the University of Pennsylvania School of Medicine, Philadelphia.

Minnesota

DR. EDWARD S. JUDD, JR., head of a section of general surgery at the Mayo Clinic, Rochester, is president-elect of the Central Surgical Association. He will take office in 1964. Dr. Judd is a graduate of Rush Medical College, Chicago. He was a fellow in surgery in the Mayo Foundation from 1937 to 1940 and an assistant surgeon at the Clinic in 1941 and 1942. He has been head of a section of general surgery since 1942 and is also a professor of surgery in the Mayo Foundation, University of Minnesota.

* * * *

DR. ANTON J. STIFTER of Pikeville, Kentucky, has moved to Winsted to join Dr. John J. Carroll in practice. Dr. Stifter was graduated from the Tulane University School of Medicine, New Orleans, in 1956.

* * * *

DR. COLLIN S. MACCARTY, a member of the Section of Neurologic Surgery at the Mayo Clinic, Rochester, will be general chairman of the Mayo Centennial in 1964. The theme of the centennial will be "Mirror to Man." As part of the observance, a symposium of internationally known persons will present their interpretations of the nature of man in his surroundings and of his achievements in face of today's stresses and dangers. A number of national medical and scientific societies will meet in Rochester during the centennial year.

The centennial will commemorate the births of Dr. William J. Mayo in 1861 and Dr. Charles H. Mayo in 1865; the arrival of their father, Dr. William W. Mayo, in Rochester in 1863; and the beginning of the fiftieth year of the Mayo Foundation. Members of the Centennial Committee are Dr. Edward S. Judd, vice-chairman; E. H. Schlitgus, secretary; and Drs. Howard B. Burchell, Charles F. Code, James Eckman, George A. Hallenbeck, Victor Johnson, and Randall G. Sprague.

Dr. Johnson, director of the Mayo Foundation, is chairman of the Public Relations Committee. Assisting him are Dr. David T. Carr, Dr. Eckman, Dr. MacCarty (ex-officio), Robert C. Roesler, and Schlitgus.

Dr. Arnold L. Brown, Jr., is chairman of an awards committee, which includes Dr. Clifford L. Gastineau and Dr. Johnson. Dr. Charles F. Stroebel is chairman of the Historical Committee that includes Dr. Arthur B. Hunt, Dr. Eckman, and Schlitgus. Dr. Eckman also is chairman of a committee to devise a centennial seal. Dr. Johnson is chairman of a committee arranging for participation of the University of Minnesota in the centennial.

Dr. Judd is chairman of a committee to coordinate the participation of Saint Mary's Hospital and the Rochester Methodist Hospital. He is assisted by Dr. Edward D. Henderson.

Leonard N. Ekstrand is chairman of a special committee of the Rochester Chamber of Commerce for participation of the Rochester community. Members of the committee are Mayor Alex P. Smekta, Mark G. Brataas, Donald H. Brown, Dr. Carr, Harold R. Cooke, Frederick J. Furlow, G. David Gentling, Thomas M. McDonnell, Dr. James V. Moon, Clark J. Pahlas, Schlitgus, Roy Watson, Jr., Charles W. Withers, and George W. Woodsum. A. Eugene Haylett, executive vice-president of the Chamber of Commerce, is secretary of the committee, and Robert C. Roesler is coordinator for Mayo Clinic affairs.

Roy Watson also is chairman of a committee for the procurement of a United States postage stamp featuring the Mayo brothers.

Dr. Edward W. Rynearson is chairman of a committee concerned with medical and scientific meetings in Rochester during the Mayo Centennial. Dr. Howard A. Anderson, secretary-treasurer of the Alumni Association of the Mayo Foundation, is chairman of a committee to arrange for participation of alumni of the Mayo Foundation. Dr. Haddon M. Carryer is chairman of a committee for the participation of the Minnesota State Medical Association.

* * * *

DR. EUGENE F. BERNSTEIN, a fellow in surgery at the University of Minnesota, has been named a John and Mary R. Markle Scholar in Academic Medicine. The scholarship, one of 25 given annually in the United States and Canada, provides a five-year, $30,000 grant to the university toward the support of Dr. Bernstein's work. Dr. Bernstein is a member of a research team directed by Dr. Owen H. Wangensteen that is studying gastric freezing for treatment of peptic ulcer. He is the fourteenth University of Minnesota scientist to receive the award during the sixteen years of the program's operation. Dr. Bernstein is a graduate of the State University of New York Downstate Medical Center, Brooklyn. He interned at Kings County Hospital Center, Brooklyn, and came to the University of Minnesota as a fellow in surgery in 1957.

(Continued on page 26A)

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NEWS BRIEFS

(Continued from page 25A)

Deaths . . .

DR. MYRTA A. WELLS, 90, of Minneapolis died February 16. A native of Franklin, Pennsylvania, Dr. Wells was also a poet and author. She was a graduate of Hering Medical College, Chicago.

* * * *

DR. LEWIS M. REID, 52, a pathologist who practiced in Hutchinson and Evansville, Minnesota, died February 11 in Hutchinson. Dr. Reid was graduated from the University of Minnesota Medical School in 1942. He practiced in Excelsior, Minnesota, for fifteen years and later at the Veterans Administration Hospital, Oakland, California.

* * * *

DR. BERNARD D. KAISER, 34, physician at Belle Plaine, Minnesota, since 1960, died February 9 in a highway accident near Belle Plaine. Dr. Kaiser was graduated from Creighton University School of Medicine, Omaha, in 1959. He was an army veteran of the Korean War.

* * * *

DR. ROBERT STEWART, 56, a native of Kimball, South Dakota, died February 20 in Broadus, Montana. Dr. Stewart was a graduate of Rush Medical College, Chicago. He interned at Swedish Covenant Hospital, Chicago, and spent a year at Denver General Hospital, Colorado. Dr. Stewart later practiced in Whitefish, Montana, and in South Dakota.

DR. ROBERT S. ANDREWS, 69, a member of the staff at Swedish Hospital, Minneapolis, since 1924, died March 6 in Cassville, Wisconsin. Dr. Andrews was graduated from Johns Hopkins University School of Medicine, Baltimore, in 1923.

* * * *

DR. DEWITT H. GARLOCK, 74, who practiced in Bemidji more than twenty years before 1960, died March 9 in Redlands, California. He had been a member of the staff of Lutheran Hospital, a member of the Bemidji State College board for eight years, and was a past president of the Rotary Club. Dr. Garlock was graduated from Rush Medical College, Chicago, in 1921.

* * * *

DR. NELS O. SANDVEN, 80, of Paynesville, Minnesota, died February 23 in River Falls, Wisconsin. He practiced in Paynesville from 1918 until his retirement in 1961. In 1960, Dr. Sandven was made a member of the 50 Club by the Minnesota State Medical Association. He was graduated from the University of Illinois College of Medicine, Chicago, in 1906.

* * * *

DR. CECIL C. SMITH, 76, of Mandan, North Dakota, died March 5 in Bismarck. Dr. Smith began practice in Garrison after being graduated in 1910 from the State University of Iowa College of Medicine, Iowa City. He was a general practitioner in Mandan from 1924 until 1950, when he was appointed health officer of the Custer District Health Unit. Dr. Smith served as physician for the Northern Pacific Railroad for many years and was physician for the state industrial school in Mandan from 1947 to 1959. In 1953 he was appointed director of preventive medicine in the state health department.

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Articles and features to be found in the next issue of THE JOURNAL-LANCET

During the past two decades the pediatric aspect of urology has gained rapidly in prominence, according to Drs. C. M. Pasquier, Jr., J. H. Campbell, E. C. St. Martin, and W. L. Geissler of Shreveport, Louisiana. Writing in the continuing series on Urology for the Practitioner, the authors point out that while pediatric urology had been viewed earlier as a curiosity, it has now reached a level of development which would almost justify the status of a specialty within itself.

Several factors have contributed to this transition, with the most important probably the development of precision endoscopic instruments in the small sizes necessary for examining the urinary tract in children.

Advances in anesthesiology, improved radiologic technics and contrast media, along with the tremendous armamentarium of chemotherapeutic and antibiotic agents, have contributed significantly to the advances which have been made in the study and treatment of urologic diseases in children.

Other papers of interest scheduled for the July issue will include:

- **The Development of Psychiatry at the University of Minnesota Medical School,** by Carl P. Malmquist, Minneapolis.
- **Retirement or Dismissal,** by Thomas J. Kinsella, Minneapolis.
- **Reaction to Bromsulphalein,** by Leo van der Reis, San Francisco.
- **Symptomatic Epilepsy,** by Sidney K. Shapiro, Minneapolis.
- **Early Pericardiectomy in the Management of Active Tuberculous Pericarditis,** by James D. Sprinkle, Jesse P. Chapman, Jr., and Robert P. Crouch, Winston-Salem.
- **The Stomach Since the Hunters,** by Owen H. Wangensteen, Minneapolis.
- **Diagnostic and Therapeutic Blocks of Occipital Nerves for Occipital Headache,** by Robert R. Jones, Rochester, Minnesota.

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The Journal-Lancet

SERVING THE MEDICAL PROFESSION OF MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA, AND MONTANA

A New-Old Skill for the General Practitioner

WILLIAM F. SHEELEY, M.D.

Washington, D.C.

For many decades our whole approach to contagious and infectious diseases has rested on the principle of doctor-community collaboration. Without this we could not have built sewage treatment plants and chlorinated community water supplies to all but eradicate typhoid fever, we could not have brought about mass vaccinations so that the peachy-smooth cheeks of our daughters need not suffer the livid craters of small pox, and in a century we could not have raised human life expectancy from less than forty years to seventy and beyond.

THE IMPORTANCE OF COMMUNITY SUPPORT

Like all other aspects of illness and health, mental illness and health involve the community. Turning aside disease and supporting health require participation by the community in the program of prevention and treatment. Even as the doctor has depended on the community and has offered it direction, advice, and service in other aspects of medicine, so shall he have to depend on the community and give it direction, advice, and service in the prevention and treatment of psychiatric illness and in the management of the emotional aspects of all medical practice. It was this dictum, among others, which moved the American Medical Association to ask for massive participation of lay civic leaders in the formulation of their plans for a vigorous attack on mental illness throughout our country.

Although the reintegration of psychiatry into medicine was an important aspect of the first AMA Congress on Mental Illness and Health held in Chicago in October 1962, another significant factor was that about 40 per cent of the participants were not physicians but prominent civic leaders. They included lawyers, journalists, industrialists, administrators of state and local mental health associations, public health nurses, social workers in community welfare agencies, probation officers, and so on, through the ranks of those interested in the health and welfare of our citizens.

We in medicine must have community help in every aspect of our efforts to assist the mentally ill and the emotionally disturbed. We have seen how little our efforts avail when we do not enjoy such help. As we remember all too well, the community, until recently, paid little more than lip service to the hospitalized psychotic patient. The community permitted him to macerate in the economy-stultified state mental hospitals. Until very recently, the community prized that hospital which could feed, house, and clothe a maximum number of patients for a minimum cost; which avoided suicides, escapes, and illegitimate pregnancies among its patients; which discharged no patients who got their names in the newspapers; which would keep patients, once

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WILLIAM F. SHEELEY *is chief of the General Practitioner Education Project of the American Psychiatric Association, Washington, D.C.*

committed, from appearing on hometown streets once more; and which readily and discreetly admitted and absorbed those citizens who, by reason of mental illness, created a public nuisance. The attitude of the community, made almost corporeal by the stigmatization of the mentally ill, by the virtual absence of rehabilitation programs for discharged patients, by the punitive and sadistic procedures of commitment, and by the niggardly appropriations for state mental hospitals, assured in almost every instance that, once mentally ill, a person would stay that way.

Although conditions have not improved notably, even the most pessimistic public psychiatrist believes that he can feel the morning breeze. State mental hospital budgets all over the country have doubled, tripled, and quadrupled or more during the past two decades. This is not much—even quadrupling a miserably small appropriation does not take one into billions but it shows a refreshing change in attitudes. Hospital discharge rates are rising steeply. The psychotropic drugs and open-door hospital policies have contributed to this rise, surely, but so have remarkably greater community sophistication and tolerance, as reflected by the ubiquitous emergence of after-care clinics, sheltered workshops, visiting nurses, family counseling agencies, halfway houses, and state and local vocational rehabilitation programs. They not only accelerate discharge rates but also retard readmission rates. By providing direct medical care and opportunity for socio-economic reintegration into the community these facilities enable patients who once would have had to return to hospital to remain in the community. Thus, despite a growing flood of admissions to our state hospitals, the daily census has fallen steadily for over six years.

The changed attitude and helping facilities are not all that we physicians shall require of the community as we seek to reduce mental illness and to foster mental health. For example, we need more of the installations, programs, and facilities which I have just listed. We also need help to provide psychiatric units in general hospitals; to find cases of psychiatric illness in schools, courts, business, industry, and elsewhere in the community; to conduct programs of public education; to raise the moneys to support our programs; to pass laws that protect and further the recovery of the sick person; and to provide patients with dignified and appropriate opportunities for gainful employment.

Yes, we physicians are just as dependent upon the community as they are upon us. Set aside, for the moment, the human cost which mental illness exacts of the sick person and his family. A financial loss affects the community as a whole every day that a patient stays in a state mental hospital and remains away from his job or even performs a job that does not use his full potential. These direct costs are obvious enough; less obvious, but perhaps more expensive, are the costs of supporting his family, of dealing with the disturbances his children create in school and on the streets, of training a new employee to fill the vacancy he has left in his job, of committing him, and so on. These cut deep into the fiscal heart of the community.

The community needs to prevent mental illness whenever possible and to manage with dispatch such illness as does occur; to do so, the community depends heavily on the physician. It needs him to give professional counsel as the community drafts programs, to advise and assist schools and courts, to guide mental health associations, to consult with others in community welfare activities, to help establish and staff general hospital psychiatric services, to provide direct psychiatric treatment in his office and in psychiatric clinics, and to advise and guide public information programs.

The general practitioner is apt to say that the picture just painted is unrealistic. He had practically no formal training in psychiatry as a medical undergraduate; he had even less interest in the field then and has generated little interest in it now. Other, more important, fields of medicine have progressed so rapidly during recent years that keeping up with them has prevented him from learning anything about psychiatry.

One cannot deny that very few doctors have taken formal education in psychiatry since leaving medical school. And yet in the very act of practicing medicine through the years those doctors have dealt with psychiatric ills and processes. A physician in South Carolina told me that one-half of the patients he admits to the hospital for diagnostic study of ostensibly somatic symptoms prove to have psychiatric disease but no somatic illness. Furthermore, half of the remaining half who do have somatic disease also have psychiatric illness which affects the course and treatment of the somatic disease. This South Carolina physician's report differs very little from the reports of physicians elsewhere. One must reckon with the fact that, whether he realizes it or not and whether he purposefully does anything about it or not, the practicing physician spends a large portion of his time confronted by psychiatric disturbances that range from simple anxiety to all-pervading schizophrenia.

Such day-to-day exposure to mental illness has unwittingly given the physician a wealth of information that would amaze him if one could somehow tease it out of him and display it to him for his study. Much of psychiatric therapy involves the doctor-patient relationship; and we have experienced these relationships not only in our practices but also in our families, among friends, and in all other places of human contact. The physician has also learned—consciously or not—that not only the drug but the attitude and the personality of the doctor giving it are important to the success of any kind of therapy.

So, the doctor has knowledge about the psychiatric aspects of medical practice. It is usually a comprehensive, useful, and surely very practical knowledge, with great potential but unintegrated and unrefined. Usually it is riddled by gaps that must be filled if it is to acquire substantial meaning. Some of the doctor's information, unfortunately, reflects the errors of folklore to which we physicians have been exposed just because we are human beings in a human society. The doctor's own emotions often are far more involved in the treatment process than he realizes. He needs to learn this important feature of himself.

Furthermore, research and clinical experience in psychiatry are making formal instruction of the practicing physician all the more feasible. Psychiatric therapies have in the past depended on complex patterns of approach and procedure which could not be mastered in a short course. Today psychiatry is far more complex than ever before but, paradoxically, many of its aspects have been stylized and simplified. Many cases of schizophrenia which once required skilled psychiatric therapy in a complex institutional setting now respond to psychotropic drugs administered at planned intervals by a sympathetic and supportive family doctor; many depressions which once required expert psychotherapy over several months now improve in days and weeks with electroshock or drug therapies. Many depressions are being treated quite satisfactorily by general practitioners benefiting from continuing advice and guidance from psychiatric consultants.

We are beginning to demonstrate in detail how emotions affect physiologic function. Thereby, the psychiatrist is learning things to teach the physician who must manage a case of peptic ulcer, ulcerative colitis, hypertension, diabetes, and all the other illnesses which respond so sensitively to the emotional state of the patient. On his side, the practicing physician, having found that medical and surgical approaches can carry his therapy just so far, is beginning to seek these bits of specific psychiatric knowledge and skills which he can use in his everyday practice.

EDUCATIONAL PROGRAMS

The situation of the moment, then, is this: Psychiatry knows more about the emotions, psychiatric illness, and their relation to other illness than ever before, and it is rapidly expanding that knowledge. The general practitioner has greater need for this psychiatric knowledge than ever before, and he is coming to recognize that need. The community is more aware than ever of the need for improved and more universal psychiatric treatment and is looking not only to the psychiatrist but also to the family doctor to provide this treatment. The conditions prevailing in this situation, of course, impel the creation of training programs for family doctors to enable them to meet public expectations.

Such educational programs are appearing in ever larger numbers. Just what the number of courses may be, probably no one knows. A recent issue of the *Journal of the American Medical Association* listed well over a hundred postgraduate courses in psychiatry—more than in any other medical specialty. But this list is surely incomplete. True, classes in these courses are usually small; in fact, a dozen physicians often comprise the entire enrollment. This dozen may be less than 5 per cent of the membership of the county medical society. But these courses are repeated once or more each year, and as they are repeated they not only reach a new group of physicians but they tend to attract a steadily growing enrollment. In this way, the educational program grows and the number of physicians having had this continuing education rises. One can scarcely doubt that the nature of medical practice in the United States is undergoing a subtle change.

The courses vary widely from one place to another depending on population density, distance from a medical school, and interests of psychiatrist-teachers and participating physicians. The University of California in San Francisco offers two courses: one is a two-day lecture series which has several hundred participants and the other, an intensive, one-afternoon-a-week, coach-and-pupil applicatory course. Until recently, a psychiatrist visited every county medical society in the states of Utah, Wyoming, Montana, and Idaho, where the total society membership may be 3 physicians. He offered them a two- or three-hour lecture and discussion every four months, which many physicians said was of definite value in their practices. In Brooklyn, every Wednesday night, in each of 25 to 30 psychiatrists' offices about 8 physicians and a psychiatrist spend two or three hours discussing emotional aspects of different phases of medical practice. In this way, twice a year, 200 or more Brooklyn physicians expand their knowledge of psychiatric aspects of medicine in a most practical and understandable way.

Now, the methods and the details of these courses may differ, but the over-all goals are the same for all: These courses aim to broaden the base on which the doctor rests his medical practice. They aim to help him become a more effective general practitioner or specialist. They do not aim to make him a psychiatrist—half-baked or otherwise. They are not intended to treat his personal neurotic problems. They are not disguised forms of psychotherapy. They were founded on the assumption that psychiatry is a necessary and proper aspect of medicine—an aspect that in the past has been tragically neglected.

Even before the AMA Congress on Mental Illness and Health, medical organizations were beginning to see their responsibilities in this field of continuing medical education. For several years now, the American Academy of General Practice and the American Psychiatric Association have supported joint committees which have pushed this education vigorously. These committees have had their analogs in the state and even the local echelons of these two national organizations. The AMA Council on Mental Health and its corresponding mental health committees of state medical societies have fostered these courses in growing numbers. More and more medical schools are offering courses—often with the collaboration and support of state AGP's, psychiatric societies, and mental health commissioners. State hospitals are participating, and, quite often, a course is sponsored by several of the responsible medical organizations in the area.

This multiple sponsorship has many advantages: The medical school assures high academic standards. The psychiatric organization helps supply teachers to augment the medical school's often overworked staff. The AGP and the state medical society assist in bringing attention to educational needs of potential registrants and make sure the approach is acceptable to the physicians. They also help interest their members in registering. The state hospital may provide classrooms and teaching patients in those areas which are remote from a university hospital or metropolitan clinic. Any and all of these organizations may help finance the course. (In this connection, the National Institute of Mental Health grants several million dollars annually to support these courses.)

I believe that, because of the AMA Congress on Mental Illness and Health and for other reasons as well, we can expect interest in this education to continue to rise sharply. Similar congresses at state and local levels are being planned all over the country. Like the AMA Congress, these regional and local congresses anticipate participation not only by physicians but also by lay civic leaders importantly concerned with the efforts against mental illness. These citizens will be looking more eagerly to physicians for professional leadership and guidance. By means of a vigorous continuing educational program in psychiatry for practicing physicians, we shall be able to provide them the leadership and guidance they expect.

This paper was presented at the North Dakota Academy of General Practice, Grand Forks, November 16, 1962.

Correction: In the article "Glimpses of the University of Minnesota's Surgery Department," May 1963, the description for Figure 4 on page 165 should read:

"First building occupied by University of Minnesota Medical Department from 1888 to 1893 at Sixth Street and Ninth Avenue South, Minneapolis."

The Diagnosis of Lower Urinary Tract Obstruction

HENRY I. BERMAN, M.D.
Louisville, Kentucky

In any consideration of diagnosis with respect to the urinary tract, certain concepts must be kept in mind. Primarily, we must accept the premise that, except for anatomic barriers or narrowings, the tract is a continuous conduit. It starts with Bowman's capsule of the glomerulus in the renal cortex, extends by means of the various tubules and loops to the papilla in the medulla, opens into the minor calyces which join others to form the major calyces and the pelvis of the kidney, which narrows into the ureter, and continues through the bladder and urethra to the external meatus on the outside.

Any condition producing a decrease in the caliber of any portion of the tubular part of this conduit causes, of necessity, an obstruction to the passage of its contents. Such obstruction, by virtue of the very laws of nature, must have a direct effect on any part of this system above the point of obstruction (figure 1). It can have no direct effect on any part below the point of obstruction. If we now divide the urinary tract into upper, middle, and lower portions, with the bladder as the mid-portion, we can readily visualize that obstructions from the meatus to the bladder must affect both kidneys, assuming that two are present. Obstruction at or above the ureterovesical orifice will affect only the kidney on the obstructed side, unless the process is extensive enough to involve both sides of the bony pelvis or lower abdomen. These concepts are important to bear in mind when interpreting the results of diagnostic procedures involving the genitourinary tract.

PATHOLOGY

Certain pathologic states are common to the presence of disease in any system of the body. Regardless of where they exist, their presence, individually or in combination, produces disease states which, unless treated, will produce dire consequences. These are well known and easily classified as congenital anomalies, infections, new growths, neurogenic dysfunctions, trauma, and foreign bodies.

In the consideration of urinary tract disease, one must add two entities which are germane and mutually interdependent. These are the pathologic states of obstruction and formation of calculus. Any of the pathologic states enumerated can produce obstruction, and, regardless of its cause, obstruction can lead to stasis of urine, infection, and formation of calculus. Calculi formed due to changes in metabolic states produce obstruction which, in turn, frequently results in stasis and infection. Foreign bodies predispose to infection and formation of calculus and, of themselves, may produce obstruction. Neurogenic changes altering the expulsive force of the bladder result in stasis, infection, and obstruction. Neoplasms, within or without the urinary tract, can produce obstruction, as can trauma. Regardless of the etiologic factor or pathologic change that produces obstruction, the end result is the same. To repeat, everything within the system above the obstruction is affected. Since the conduit we have described is controlled by muscular action and since muscular action reacts to obstruction the same way, regardless of the system involved, these precepts are valid. The muscle reacts first by more frequent, vigorous contractions, compensating for the obstruction by hypertrophy as long as it can. Just as it is readily demonstrated in the cardiac muscle, so is the phenomenon of hypertrophy seen in the urinary tract—especially the bladder. After hypertrophy, decompensation can occur, followed by dilation, atony, loss of function extending all the way to the kidneys and resulting

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HENRY I. BERMAN *is chief of urology, Veterans Administration Hospital, and assistant professor of urology, University of Louisville.*

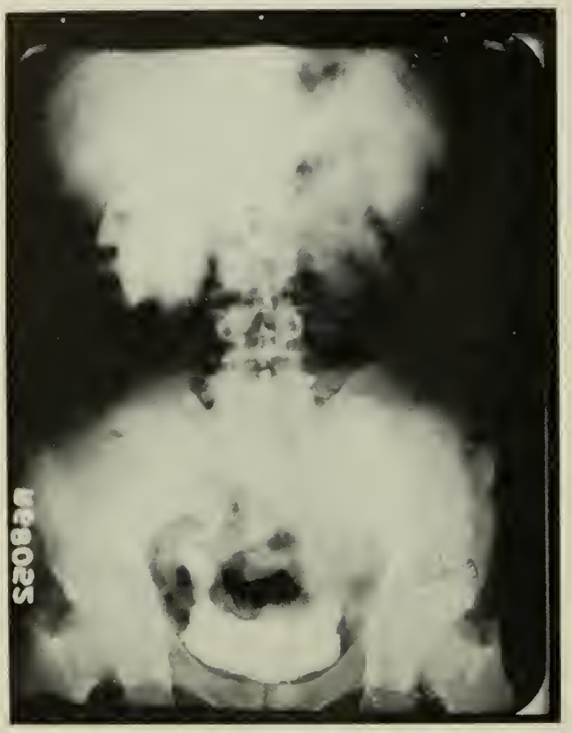

Fig. 1. Postvoiding cystogram of a man, showing reflux and hydronephrosis secondary to congenital phimosis. It was not corrected until adulthood.

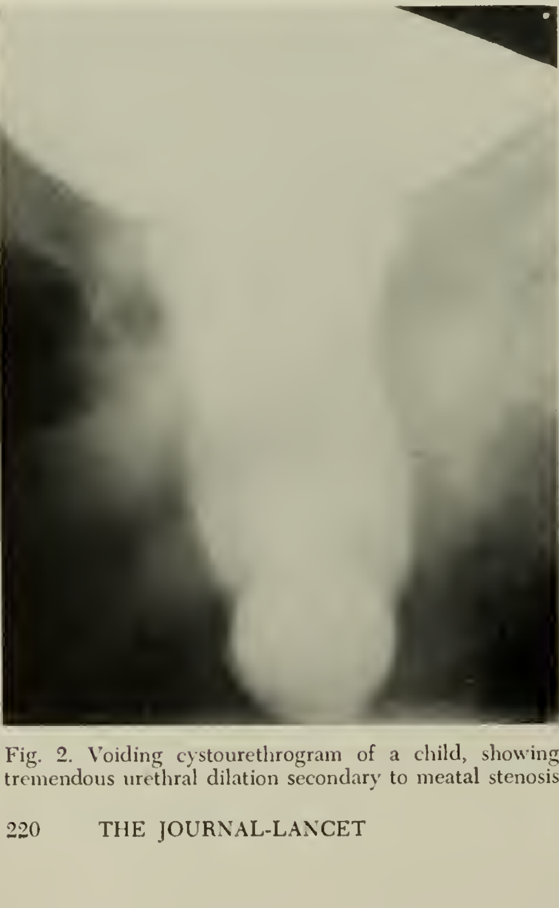

Fig. 2. Voiding cystourethrogram of a child, showing tremendous urethral dilation secondary to meatal stenosis

in renal failure, uremic states, and, eventually, death.

SYMPTOMS

The symptoms of obstruction in the lower urinary tract can be obvious or obscure. They are identical in patients of all ages and are chiefly concerned with disturbances of urination. We see urgency associated with an irritable bladder whose capacity may be reduced. This also is often associated with frequency. Later, there is hesitancy in starting the stream and difficulty in voiding, associated with straining, burning, dysuria, and nocturia. There may be complete decompensation of the bladder muscle, resulting in residual urine in varying amounts and, in severe cases, complete retention. Hematuria may or may not be present, depending upon the underlying cause of the obstruction. Frequently, in the presence of incontinence, the possibility of overflow from a distended bladder is overlooked and, in children, urgency is often mistaken for enuresis. In fact, there is collective opinion favoring obstruction as the physical basis for enuresis in a large percentage of cases.

Pain, as a symptom in lower tract obstruction, can vary from slight discomfort in the suprapubic region to the intense agony of acute retention. There can be pain in the pelvis, back, hips, thighs, perineum, and rectum. Pain may be continuous, intermittent, or referred. It may be associated with and aggravated by urinary symptoms. One can readily appreciate the necessity of investigating the urinary tract in the presence of such local symptoms.

It is in the realm of the obscure symptom pointing elsewhere, typical of disturbances of other systems but due to urinary tract pathology, that our diagnostic acuity is tested. This is especially true in children and women. Children manifest febrile reactions to many disturbances and, in instances, this may be the only symptom present. They have exhibited marked gastrointestinal disturbances, with vomiting and diarrhea. In infants, pain may be prominent and manifested by distinctive cries, facial contractions, and irritability. Since the presence of lower tract obstruction in children is so often associated with congenital malformation, the condition may have developed over so long a period of time that the signs and symptoms pointing to the genitourinary tract may be unappreciated and even overlooked.

In women, especially in those with urethral obstructive conditions, we see symptoms that differ from those in men, although frequently they are analagous. Here, also, one sees many manifestations of gynecologic pathology drawing attention to the urinary tract. Vaginal and cervical lesions may first make themselves known by urinary symptoms. Obstruction due to uterine pathology may exhibit symptoms pointing elsewhere than the urethra and the bladder.

It goes without saying that any patient complaining of urinary disturbances should be examined thoroughly. It is also valid that any patient in whom no definitive cause can be found for persistent backaches, vague complaints, or gastrointestinal symptoms, with or without pain, should have an examination of the genitourinary system. The possibility of obstructive disease should be kept in mind by the physician whenever he encounters a patient, whether infant or adult, with acute or chronic disease not readily diagnosed by presenting symptoms or in which the diagnosis remains hidden.

The specialty of urology is unique because in practically 100 per cent of its patients one can either visualize or demonstrate the nature and degree of pathologic changes present. Not infrequently, however, a good routine history and physical examination, combined with some simple laboratory work and roentgenographic studies, will reveal positive diagnostic findings without special examinations. When indicated, the latter can be more intelligently performed following a good preliminary investigation.

OBSTRUCTION IN CHILDREN

History. An accurate, carefully analyzed history is of great importance in the diagnosis of disease of infants and children, but its chief value will depend upon intelligent observations made by the mother. The presenting symptoms in many are the results of chronic obstruction associated with infection and frequently manifested by disturbances of the gastrointestinal system, producing gastritis, constipation, diarrhea, anemia, fatigue, and failure to gain weight. If urinary tract symptoms or urinary findings of pyuria are present, one's attention is immediately directed to the urinary tract. A knowledge of the pattern of voiding and its frequency is most important. This pattern changes as a child grows older but, at about age 12, it is essentially the same as that of an adult.

Physical examination. In the infant, physical examination at birth, or soon after, will disclose meatal atresia, meatal stenosis, phimosis, or labial atresia in the female. So often one discovers phimosis but fails to note the narrow or inadequate meatus which is also usually present (figure 2). If this is not diagnosed at birth, straining and pain on urination are common symptoms. Pain may be accompanied by hematuria resulting from ulceration of the meatus under a long foreskin. Complete urinary retention is comparatively rare in young children. It can be associated with neuromuscular disease of the bladder, congenital urethral valves of the posterior urethra, contracture of the bladder or hypertrophy of the urethral mucosa, stricture, or an acute disease such as scarlet fever. In the presence of strictures, posterior urethral valves, and bladder neck lesions, the onset of obstruction is so insidious that it may be overlooked for years unless kept in mind (figures 3 and 5). Chronic obstructions resulting in unexplained fever and bizarre general symptoms of malaise and undernourishment usually require refined diagnostic procedures after their presence has been suspected. Also, in acute retention, one must keep in mind the possibility of a child's hesitating to empty his bladder to avoid pain. This can be associated with rectal pathology, such as worms, and sometimes, in girls, with vaginal infections; it can even be due to foreign bodies introduced accidentally or intentionally. In female infants and in older children the possibility of hydrocolpos or hematocolpos, producing extrinsic pressure and obstruction to voiding, must not be forgotten. The presence of spina bifida, meningocele, tumors, congenital syphilis, and other conditions that may

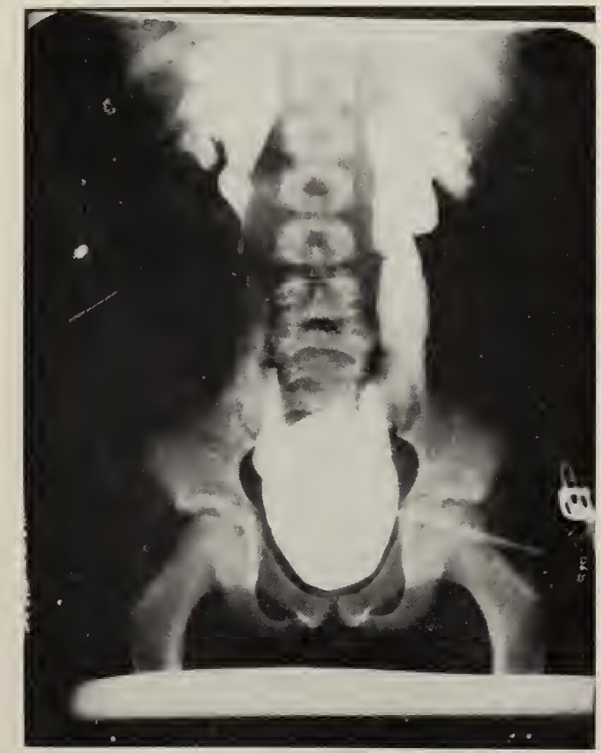

Fig. 3. Extensive bilateral hydronephrosis and hydroureter, in a child, secondary to bladder neck fibrosis

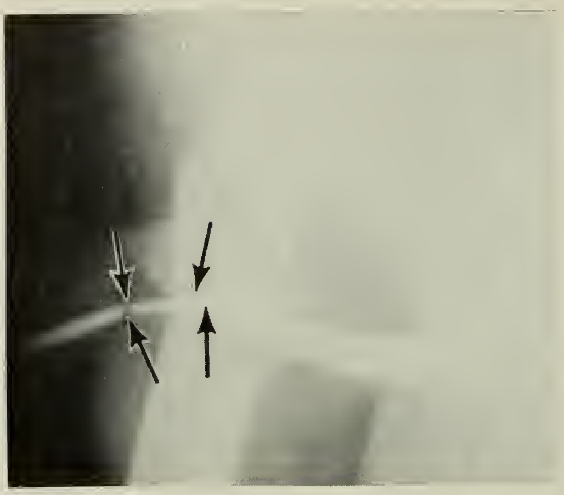

Fig. 4. Urethrogram showing strictured area in a membranous urethra

directly or indirectly produce obstruction, are usually observed on good examination. Finally, incontinence, as a result of neurogenic disease or overflow from a full bladder, must be kept in mind and differentiated from true enuresis. Ill-formed habits and changes of emotion and environment play a part in the evaluation of the over-all problem of lower tract disease.

Diagnosis. After a careful history and physical examination, diagnosis can be augmented by urinalysis; careful calibration of the urethra by the passage of a catheter, if indicated; the determination of the absence or presence of residual urine; a gentle rectal examination, when necessary; and kidney, ureter, and bladder roentgenograms. Children can be subjected to all the diagnostic procedures, both by instrument and roentgenography, that are available to adults. In addition, today there are roentgenographic technics peculiarly well adapted for use in the diagnosis of lower tract disease in children. Voiding cystograms and cinefluoroscopy have opened up entirely new vistas with respect to the diagnosis and treatment of these conditions. An awareness of the consequences of lower tract obstructive uropathy, based on the knowledge that frequently its manifestations are bizarre and not directed toward the expected system, is a natural consequence of a high index of suspicion when dealing with children.

OBSTRUCTION IN WOMEN

History. In women we encounter another set of conditions when we consider lower urinary tract obstruction. Congenital lesions play a major role in children. In the adult such lesions have usually been discovered or their consequences noted, although rarely we see an adult with pathology based on the presence of a congenital malformation. In the older group consideration must be given to factors usually associated with pathology outside the urinary tract. These are problems associated with the genitalia and the reproductive organs whose anatomical proximity is reflected by urinary symptoms. In many cases, diagnosis can be accomplished here by a carefully assessed history, with special emphasis on recurrent disease and obstetric history, if indicated; a good physical examination, which must include vaginal examination both manually and by speculum or a careful rectal examination; a kidney, ureter, and bladder roentgenogram, if available; and some laboratory procedures. An accurate history, with respect to previous urinary tract disease, will aid in the diagnosis even before examination is accomplished.

Examination and instrumentation. Obstructive symptoms in the woman are essentially the same as in the man, even to the extent that one hears of a so-called "female prostate" at the bladder neck. This is a term mistakenly used where bladder neck fibrosis, usually secondary to chronic inflammatory changes, can give the cystoscopic appearance of a median bar and respond to transurethral resection. The analogy is obvious. Patients first should be examined in a supine position on the table with palpation of the lower abdomen and flanks to note the presence of any masses and their size, shape, mobility, and tenderness, if present. A distended bladder, inguinal nodes, or umbilical disease may be present and playing a role. In the umbilicus we look for discharge associated with a patent urachus which may extend from the bladder. The patient is then put into the lithotomy position to allow for the proper evaluation of the lower urinary tract and external genitalia. In the woman, one does not see the types of stricture seen in the man. The urethra is short, straight, and quite patulous; narrowings or decrease in the caliber are usually on a congenital basis and a patient is frequently symptomless until secondary changes develop. These changes may occur as a result of infection, trauma, extrinsic tumor, or childbirth. There may be involvement of periurethral glands, which are fertile grounds for chronic infections, with resultant thickening of the paraurethral tissues. Examination may disclose the presence of prolapsed urethral mucosa at the meatus, which is tender and bleeds easily. This is not to be mistaken for a urethral caruncle, which is actually a hemorrhagic tumor and protrudes through the urethral meatus. Pressure on the urethra by the finger in the vagina may cause such protrusion. The same motion may produce discharge from periurethral glands and, by palpation, disclose the presence of periurethral fibrosis.

Careful catheterization after thorough cleansing of the area allows one to calibrate the urethra and determine the presence of residual urine. A lag just before entering the bladder and difficulty in passing the catheter at the bladder neck may demonstrate bladder neck fibrosis. In the hands of someone who has some experience in their use, straight or short-curve sounds or bougies can also be used to calibrate the urethra. Inspection of the vagina and speculum examination of the cervix may disclose the presence of extrinsic masses, infections, or ulcerations that could promote obstruction. A careful bimanual examination for malposition of the uterus; for uterine, tubal, or ovarian masses; and for adhesions or any of the other processes common to female pelvic pathology is an integral part of the examination for causes of lower urinary tract obstruction. One must keep in mind such factors as congenital lesions, infections, the results of previous surgery or radiation therapy, and changes due to pregnancy or, in later life, menopause. When indicated, a careful rectal examination is of value in determining lesions that may support obstructive development.

X-rays. Roentgenographic examination of the kidney, ureter, and bladder should always be made and, if such service is available, an intravenous urographic series should be done. Cystourethrograms can be performed in any office with modern roentgen-ray equipment, and voiding cystograms can be made easily. Lesions of the bladder may be diagnosed with such examinations, and the presence of bladder calculi, tumors, diverticula, or neurologic changes can be determined. All of these are important etiologic factors in the diagnosis of obstruction.

Special examinations. Finally, a superficial neurologic examination is certainly indicated in the presence of a distended, atonic bladder or other obstructive symptoms whose cause is not readily apparent. One can check deep tendon reflexes, superficial reflexes, and peripheral sensation. Heat and cold sensations in the bladder are readily determined as are perineal sensation and muscle motor function. The possibility of spinal cord lesions must not be overlooked.

OBSTRUCTION IN ADULT MEN

History. When obstruction of the lower urinary tract in the male is mentioned, most physicians immediately think of prostatic disease. This is certainly true in a majority of adult males entering the so-called "era of old age," for it has been well stated that age 50 is the old age of youth and the youth of old age. Unfortunately, this may also be the age period when some youthful indiscretions may now be exacting penalties in the way of urethral obstructions and other prostatic infections. While one must keep in mind prostatic disease in all males, an awareness of every possible cause of obstruction must also be kept in mind in dealing with symptoms of urinary disturbance. Again, a careful history is most important. Age at the onset of symptoms and details of previous urinary tract disease and disease of other systems are most important factors in the taking of a history as well as doing a physical examination. Attention to details is of paramount importance. The presence of a tight foreskin or contracted meatus may be the underlying cause of complete renal destruction by the fourth decade. Advanced bilateral hydronephrosis has been frequently seen secondary to phimosis (figure 1). Straining, hesitancy, urgency, nocturia, and burning are all symptoms which suggest obstruction anywhere from the meatus to the bladder neck.

Examination and instrumentation. Inspection of the meatus can reveal either a congenital or an acquired narrowing of the meatus. This can be calibrated by catheter, metal sound, or bougie. Often, attempts to pass a catheter will disclose a stricture (figure 4). Sounds or bougies are also valuable in calibrating the urethra for stricture. A sound is one of the most dangerous

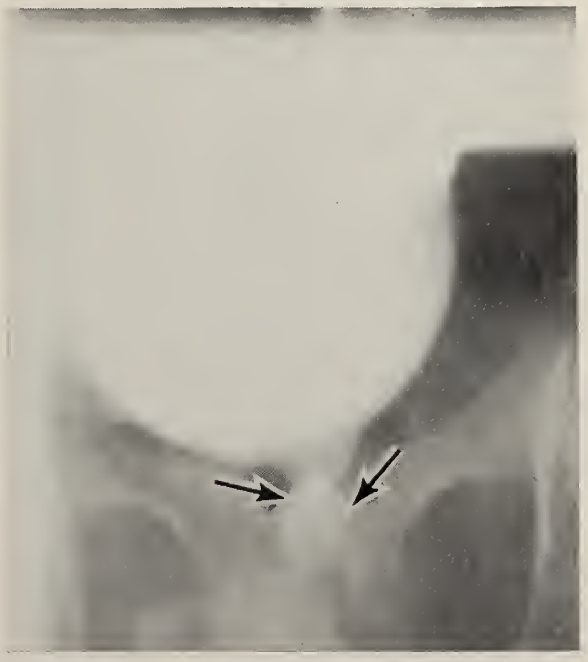

Fig. 5. Voiding cystourethrogram of a child, showing posterior urethral valves

instruments used in the practice of medicine. One must be extremely careful in passing instruments of any kind through the urethra. Even a small filiform could be passed through the wall of the canal and create a false passage. If a catheter or sound meets an obstruction to passage as a result of a stricture, a small acorn bougie may be used to calibrate the size of the passage. The passage of multiple filiforms should be attempted in the presence of urinary retention due to stricture until one of them passes through into the bladder. A small following catheter attached to the filiform is then used to empty the bladder. Such passage should be attempted in the presence of urinary retention before any effort is made to calibrate and dilate urethral strictures. A full bladder in the presence of stricture or prostatic obstruction is more difficult to catheterize than one where the urethra is normal and there is no bladder neck disease.

The passage of urethral instruments, even catheters, requires a certain degree of dexterity, training, and experience. It is not an entirely innocuous procedure and can be fraught with danger. False passages with urinary extravasation, abscess formation, local gangrene, sepsis, and even death with septicemia have followed undue roughness in urethral instrumentation. Gentleness in the passage of instruments is a most important factor and the determination of the presence of stricture depends on a moderate approach. Frequently the scars of strictures can be palpated along the course of the pendulous urethra and this, associated with a history of infection, may preclude instrumentation. The use of metal catheters is condemned except in the hands of experts, and use of a catheter on a metal guide requires training and experience. While strictures are mostly acquired secondary to infection, injury, or foreign bodies, congenital narrowings are possible. In the male patient, congenital pathology in the posterior urethra is usually manifested earlier in adult life, but posterior urethral valves may be overlooked until the symptoms resulting from their presence bring him to a physician. There may already be present upper tract pathology, giving uremic symptoms and renal failure, but this, like the late destruction due to phimosis or other meatal diseases, is the exception rather than the rule. Urinary tract symptoms plus urinary retention may be present. The symptoms may suggest bladder disease, prostatic enlargement, or chronic retention. The determination of residual urine by the passage of a catheter following voluntary voiding is most important.

Pathology. Age, rectal examination, and history are important factors in directing the course of diagnostic procedures. An adult between the ages of 20 and 40, with urinary symptoms suggesting obstruction and in whom no evidence or history of the possibility of urethral stricture exists, may well have one of several conditions in the posterior urethra which could be producing his difficulty. Strictures of the posterior or prostatic urethra are practically always secondary to trauma, either accidental or surgical. History here will give the lead. Sexual aberrations, in the way of loss of libido and premature or bloody ejaculations, or both, are associated with posterior urethritis and may exhibit urinary symptoms as a result of swelling and edema of the verumontanum. A history of chronic masturbation and faulty sex habits, such as withdrawal or other birth-control efforts associated with urinary symptoms, plus a tender, congested prostate gland, leads one to suspect the area of pathology. Bladder neck contracture, either congenital or acquired, may produce symptoms of prostatism in a younger adult whose rectal examination fails to confirm an enlarged gland (figure 6).

Prostatism. Finally, we come to a consideration of the "bète noir" of obstruction in the lower urinary tract—the prostate gland. This organ is subject to many disorders, the most frequent being acute and chronic infection, benign hyperplasia, and carcinoma. Acute infections, formerly always considered to be caused by gonorrhea, can be associated with generalized infections with blood-borne bacteria, instrumentations, or local extension from neighboring pathology. Symptoms are usually those of acute infection with urinary discomfort. There may be an accompanying urethritis, perineal pain, much tenderness, and even urinary retention. Chills and fever up to 103° F. and over are not uncommon. The diagnosis is easily made by a careful rectal examination as well as examination of the urine, which is frequently cloudy and may contain blood. The acutely infected gland is swollen, tense, and extremely tender, and the prostatic secretion is purulent. The rectal examination must be done very carefully; instrumentation should be avoided because of the danger of producing complicating epididymitis. Urinary obstruction caused by acute prostatitis is observed in very acutely ill patients, usually in the second to fourth decades.

Benign prostatic hypertrophy. Chronic infection of the prostate is usually seen in middle-aged persons and by itself does not cause urinary obstruction. It is frequently associated with hyperplasia. Urinary obstruction for years has been

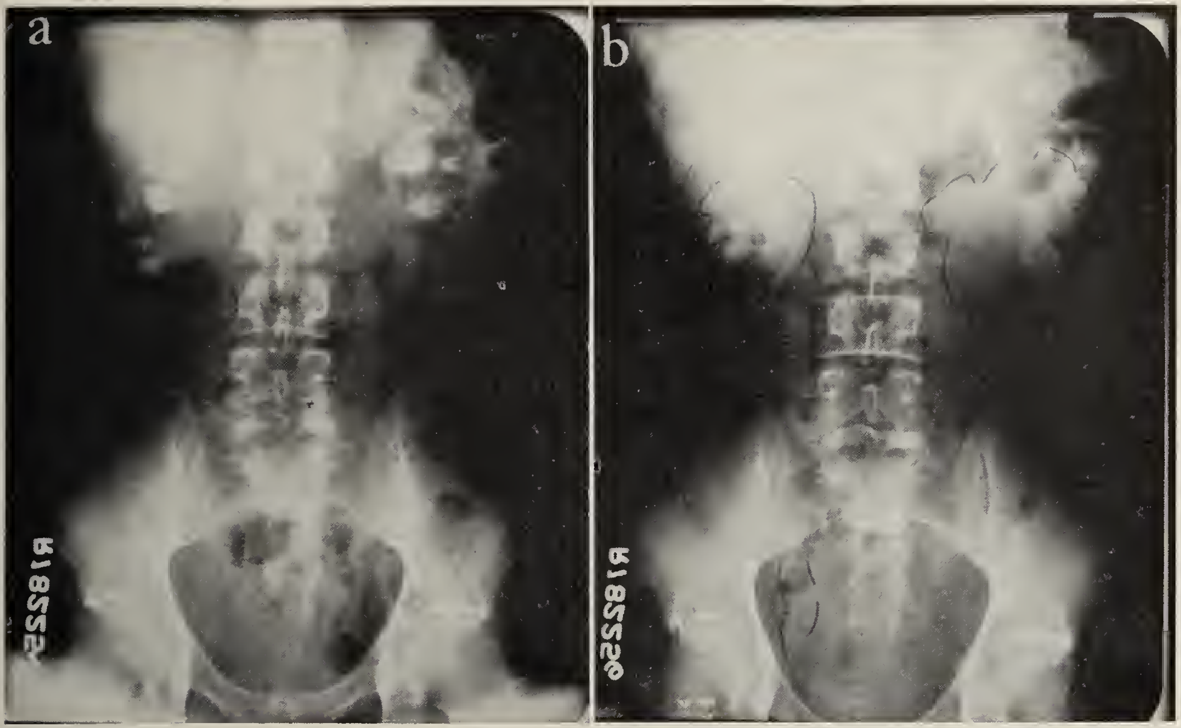

Fig. 6. *a* Fifteen-minute intravenous pyelogram of an adult with bilateral disease secondary to bladder neck fibrosis. *b* Sixty-minute intravenous pyelogram of the same patient

associated with benign prostatic hypertrophy. This term is a misnomer since we now accept a process of hyperplasia of certain elements, rather than hypertrophy, as the true cause of the obstruction. Figures as to incidence will vary with authors, but most men agree that between the ages of 50 and 60, about 65 per cent of males will have some enlargement and the incidence will increase to about 80 per cent after age 70.

The symptoms are strictly those associated with emptying the bladder, progressive slowing of the stream, increased effort required to void, frequency, nocturia, residual urine, and retention. Pain is variable and hematuria is possible, depending upon associated lesions such as calculi, diverticula, and infections. Occasionally a patient may progress to severe renal damage in a uremic state before symptoms become involved enough to bring him to a physician. The diagnosis based on a careful history and good examination should not be difficult. The determination of residual urine is important and must be carefully accomplished. Much dependence is placed on the rectal examination. However, rectal palpation may be misleading in attempting to gauge the size of the obstructing prostate. This is true because much of the obstructing mass may be projecting into the bladder. A large middle lobe cannot be felt rectally. The presence of symmetrically enlarged lobes filling the rectal space and even impinging upon the rectal walls is not mistakable. It may be the cause of such complaints as constipation, difficulty in evacuation, and hemorrhoids motivating a patient to see his doctor. Generally, he accepts urinary symptoms as a part of growing old because his father and grandfather also had them.

Carcinoma of the prostate. The posterior lobe is usually flat and obscured by the large lateral lobes. The benign gland is described as smooth, rubbery in consistency, variable in size, and regular in contour. A small gland may be fibrotic, indurated, and associated with bladder neck obstruction and chronic prostatitis. Too often, patients who, on rectal examination, have an enlarged, irregular, nodular, indurated, or, in areas, hard prostate gland have, unmistakably, carcinoma of the prostate. They have urinary symptoms of obstruction because of the accompanying hyperplasia but are seen too late to effect curative treatment. Unfortunately the onset of prostatic carcinoma is usually symptomless and not associated with obstructive features until benign hyperplasia also occurs. In many instances the patient may not come to the attention of his physician until the symptoms of cancer dissemination, such as anemia, pain, loss of both weight and appetite, weakness, and even pathologic fractures, are manifest. The importance of periodic semiannual or annual rectal examinations in all men over the age of 50 cannot be stressed too emphatically. This is the only way to detect solitary nodules, indurated areas, or changes in consistency of the prostate gland that may suggest malignancy, which can then be confirmed by careful biopsy and further examination to enable one to treat for cure.

Diagnosis. The final determination, involving the size of the obstructing prostate and its configuration, and an assessment of the degree of obstruction to determine therapy indicated, can be made by instrumental and roentgenographic examination. Instrumentation in the presence of any condition of enlargement of the prostate gland is associated with a definite risk. Trauma from the passage of instruments may produce a retention when none has been present before. Introduction of infection must be considered. Such examinations are usually best performed with the patient in the hospital and under ideal conditions. However, roentgenographic examinations can be performed judiciously in an office. Intravenous pyelograms are a necessary part of this examination and not only provide information as to the kidneys but may also demonstrate some bladder abnormalities and data with reference to the intravesical protrusion of the enlarged prostate. The presence of calculi in the prostate, frequently the result of chronic infection, and calculi or diverticula in the bladder can also be ascertained by roentgenographic examination. Cystograms, in anteroposterior and oblique positions, made after catheterization to determine residual urine and by the introduction of an opaque medium, and even supplemented by air cystograms, are a great aid. Laboratory determinations of blood chemistry, renal function, and urine changes are all supportive measures to be used in reaching a final conclusion as to the role the prostate is playing in producing a lower urinary tract obstruction.

NEUROGENIC CAUSES OF OBSTRUCTION

In this discourse we have purposely avoided any detail with respect to neurologic conditions. Symptoms of urinary obstruction in these patients may vary from complete retention at onset of cord injury to gradual development of obstruction or other changes in urinary function. Congenital neurologic disorders are usually readily manifest. Neurologic disease in the adult may present itself by gait disturbances, peripheral nerve changes, or any one of many readily diagnosed patterns. The urinary tract may become secondarily involved over a gradual period. In some conditions, as is frequently demonstrated in multiple sclerosis, bladder dysfunction may be the first symptom of the neurologic disease. As noted previously, a superficial neurologic examination is always indicated in patients when the etiology of lower tract obstruction is obscure. Cystograms should be made. Simple cystometric studies of the bladder capacity and pressure response to increment filling can be accomplished with a two-way catheter and manometer, made with a glass tube mounted against a metric rule. The catheter is attached to the tube and the height of the solution instilled in the bladder can be measured in centimeters at stated time intervals. These heights, roughly indicating pressure within the bladder, can be plotted as a curve to determine bladder capacity, response to filling, desire to void, and maximum voluntary pressure. Atonic or hypertonic bladder conditions can be roughly determined as well as the presence of uninhibited spasms and pain. Simply done, this can be a rule-of-thumb determination as to the indication for further studies.

SUMMARY

To recapitulate, lower urinary tract obstruction, present over a long period of time, may cause irreversible changes. The diagnosis is usually based on a carefully obtained history associated with symptoms typical of urinary difficulty and supported by findings of obstructive lesions that exist anywhere from the meatus to the bladder. The lesions can be congenital or acquired, intrinsic or extrinsic. Lesions may be suspected or seen by direct examination or demonstrated by roentgenograms. The judicious use of instruments to calibrate the urethra is indicated in the establishment of a diagnosis. The absence or presence of residual urine, which is the result of obstruction, should be established. Finally, the diagnosis can be substantiated by the use of more refined roentgenographic technics, demonstrating definite conditions that are associated with obstruction. The problems of obstruction are common to both sexes from infancy to senility.

The photographs used in this report are by Lester Heitlinger, Medical Illustration Service, Veterans Administration Hospital, Louisville, Kentucky.

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Benign Prostatic Hypertrophy and Lower Urinary Obstruction

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THE increasing number of senior citizens, as a result of our lengthening life span, causes us to focus our attention on those diseases characteristic of advanced age. Due to publicity in the past several years, the prostate gland has been the hero-villain of various types of articles in lay publications. This greater degree of "prostate" awareness has resulted in patients' seeking earlier diagnosis and treatment, only to be met by recent vilifications of the catheter as an instrument of the devil.[1–3]

ETIOLOGY

In pursuing the problems of lower urinary tract obstruction in men, probably over 95 per cent will be found to originate in the prostate. Further, some 70 per cent of men over 55 years of age will have manifestations of this problem to some degree. Correspondingly, about 20 per cent of all men over 55, with or without obstructive symptoms, have carcinoma, and roughly 50 per cent are associated with benign prostatic hypertrophy. Though the prime concern of this paper is benign prostatic hypertrophy, emphasis must be placed on careful rectal evaluation of the prostate in all men over age 50, whether urinary symptoms are present or not, to rule out prostatic carcinoma. In the first line of cancer control, through early detection, is the general practitioner, who, as the family physician, has the opportunity of screening all his male patients over 50 by a routine rectal examination.

The 5 per cent or less of males with lower urinary tract obstruction not due to prostatic hypertrophy or carcinoma will present a variety of causes: (1) prostate: abscess, acute infection, or tuberculosis; (2) urethra: congenital valves, stricture, calculus, foreign body, tumor, or para-urethral abscess; and (3) penis: metastatic tumor, tumor of glans, stricture of external urethral meatus, or severe phimosis. This paper will be confined to benign prostatic hypertrophy; however, any one or more of these conditions may also be present and complicate the clinical picture.

PATHOGENESIS

Anatomically, the prostate gland, by encircling the vesical outlet, is ideally located to produce obstructive symptoms. The obstruction may result from glandular hyperplasia, glandular fibromuscular masses, or a combination of both. Several types of gross enlargement may occur: (1) unilobar (median), (2) bilobar (2 lateral lobes), (3) trilobar (2 lateral lobes and the median), and (4) confluent enlargement to include fibrous contracture. Various theories[4] have been advanced to explain the origin of prostatic hyperplasia relative to hormonal imbalance, inflammation, arteriosclerosis, embryologic factors, neoplasm, or periductal stroma proliferation. The etiology is still considered unexplained.

As the prostatic enlargement obstructs the prostatic urethra and vesical outlet, it produces a gradual, damaging interference with urination. As voiding demands ever-increasing pressure, the bladder wall hypertrophies, creating coarse mucosal trabeculation and cellules, eventually leading to diverticula. When the bladder's compensatory hypertrophy reaches its limit, decompensation, dilation, and accumulation of residual urine occur. If decompensation occurs suddenly, complete urinary retention is the consequence. However, back pressure also gradually produces

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hydroureter, hydronephrosis, and impaired renal function (terminating in uremia and possibly death).

Renal function is affected by partial urinary obstruction in that there is a reduction in renal plasma flow and glomerular filtration rate greater than that due to age alone. Tubular function is not altered unless there is infection. The process is speculative, but investigators[5] suggest that this occurs by means of a nervous reflex, relating urinary output to intravesical pressure; however, this has been questioned by others.[6,7] They further theorize that the primary mechanism of diminished renal function is a compression of the renal venules by increased interstitial pressure. Therefore, renal blood flow and glomerular function are diminished in patients with symptomatic prostatic hypertrophy.

SIGNS AND SYMPTOMS

Various symptoms are present in different combinations and are mainly the expression of obstruction and infection. Davis[8] repeats the basic concepts: "First, obstruction predisposes to infection. Second, obstruction perpetuates infection." Most patients complain of urinary frequency, nocturia, difficulty in starting the stream, weak stream, dysuria, and dribbling, either due to urgency or after voiding. Terminal hematuria may occur. Varying quantities of residual urine are present, and marked distention of the bladder may create little discomfort when the obstruction has taken place slowly. Even so, the patient may feel he is passing adequate amounts of urine without difficulty or has adjusted to existence with overflow incontinence. At times, the symptoms develop so insidiously that the patient accepts them as incidental to normal aging. Varied or vague gastrointestinal symptoms may be present due to chronic uremia.

Nocturia in the aged patient is not only of urologic origin (lower urinary tract obstruction, calculi, diverticula, infections, and others) but may be secondary to cardiac decompensation or renal failure. Rubin and Nagel[9] outlined the differentiation and stated that cardiac failure was the commonest cause of nocturia. The relationship of the chronic exhaustion caused by urinary obstruction, with its attendant uremia, nocturia, and other symptoms, is a well-oriented clinical observation as a precipitating or aggravating factor in cardiac decompensation.[9-11]

Early renal failure nocturia is characterized by a low urinary specific gravity and an increased volume of urine day and night. In early cardiac failure, one of the first signs of decompensation is nocturia, which is characterized by a normal or high urinary specific gravity, decreased volume of urine during the day with an increase at night, and relief of the nocturia by energetic cardiac therapy.

It must be emphasized that noticeable obstructive changes in the bladder, ureters, and kidneys can occasionally occur with relatively mild symptoms until severe uremia, acute retention, or infection occurs. The clinical picture may be obscured by uremia, toxicity, and anemia, exaggerating a concomitant, disabling geriatric condition (such as cerebral arteriosclerosis, cardiovascular disease, and pulmonary disability). Acute urinary retention may be the end result, precipitated by congestion caused by exposure to cold or sudden weather change, sexual or alcoholic excesses, urinary infection, or prolonged interval between voidings, such as during a long auto ride or a card game and after beer drinking).

Clinically, the elderly patient with well-established urinary obstruction appears chronically ill. Careful, over-all evaluation is even more pertinent in the geriatric patient whose body organs or functions may be significantly involved in varying combinations. Digital rectal examination of the prostate may reveal any degree of prostatic enlargement. It must be kept in mind that, not infrequently, vesical neck obstruction may occur when the rectally palpable size is normal or even diminished, as in intravesical median lobe enlargement, median bar, or over-all vesical neck contracture. Suprapubic enlargement of the distended bladder may be evident.

DIAGNOSTIC AND LABORATORY PROCEDURES

The determination of the amount of residual urine is important where symptoms are present but acute retention has not occurred. With a residual amount of more than 60 ml., urinary symptoms, and obstructive bladder wall changes, surgery is indicated. Where residual urine is difficult to determine, due to the patient's lack of co-operation, instillation of 45 to 60 ml. of cod-liver oil or sterile mineral oil into the bladder may resolve the issue.[12] If no oil is found on catheterization after the patient has voided several times in the next twelve to twenty-four hours, he is completely emptying his bladder.

Of recent years, the urethral catheter has been vehemently condemned.[1-3] However, using strict aseptic precautions, small-caliber catheters, frequent catheter changes (at least once a week or oftener), better catheter drainage management, and concomitant specific medication, the role of the urethral catheter as a diagnostic and therapeutic tool can be continued with minimal risk.[13,14] The fact that obstructive lesions, especially prostatism, are the most important predisposing factors in pyelonephritis must constantly be kept in mind. Besides the need for meticulous technic, it is mandatory that once an obstructed bladder is drained, it should not be allowed to obstruct again. Maintenance of either suprapubic or urethral catheter drainage until definitive surgery is of paramount importance where there is urinary infection with renal insufficiency secondary to the prostatic obstruction. Further, the infection must be controlled by the judicious use of chemotherapeutic and antibiotic agents.

The question of rapid or gradual decompression of the bladder has been best answered by Creevy: ". . . no ill effects attributable to the rate of emptying have been seen."[15,16] Continuous drainage must be maintained after an obstructed bladder is emptied and surgery is performed. Suprapubic cystostomy is best utilized in poor-risk patients with uremia or severe infection, or both, in patients where a urethral catheter cannot be introduced, or in patients with a large vesical calculus. Urinary drainage is indicated until the blood urea nitrogen levels are normal or remain stable, even though elevated. An indwelling urethral catheter is used in the majority of patients today, as they are seen in the earlier phases of urinary obstruction, requiring short periods of preoperative drainage. However, in the absence of urinary infection, renal insufficiency, and severe back-pressure effects, Flocks[17] has observed that preoperative catheter drainage may be unnecessary or even deleterious.

Laboratory studies may show impaired renal function, dilution of urine, elevated blood urea nitrogen, elevated chlorides, and low plasma carbon dioxide. Anemia and hypoproteinemia may be present or become manifest after the dehydrated patient is adequately hydrated. Additional preoperative studies usually include tests relating to urine culture, blood sugar, serum electrolytes, serum acid phosphatase, phenolsulphonthalein, excretion, and serology (syphilis), as well as the chest roentgenogram and electrocardiogram. When necessary, consultation with an internist is sought where the cardiac status or diabetes requires attention.

When the azotemia is not above 35 to 40 mg. per cent of blood urea nitrogen and the patient's condition is fairly well stabilized, an excretory urogram is routinely obtained. The importance of this study must be emphasized as it yields necessary information (calculi, degree of hydroureter or hydronephrosis, bladder contour, prostatic filling defect, neoplasms, congenital abnormalities, and any osseous changes such as osteoarthritis and metastatic prostatic cancer). Cystourethrography may be added to the excretory urography.

Cystoscopy is done routinely to evaluate the prostatic enlargement and to determine the surgical approach. Complicating conditions, such as tumors, calculi, and diverticula, can be readily determined. Preoperative cystoscopy has been condemned as unnecessary or even dangerous because of potential aggravation of infection. But cystoscopy with 18 to 20 F. instruments, using a gentle, aseptic technic in a stabilized, afebrile patient receiving urinary antiseptic therapy, can be tolerated with minimal risk.

PREOPERATIVE CARE

Management of the patient will vary somewhat depending on his general status, including (1) adequate fluids to hydrate patient, support renal function, and, with base, relieve acidosis; (2) transfusions of whole blood or packed cells for anemia; (3) vitamins for improved nutrition; and (4) chemotherapeutic agents and antibiotics to combat infection. Only in the event of severe persistent bleeding, known to be coming from the prostate, is a prostatectomy an emergency condition. With adequate bladder drainage, sufficient time is taken to stabilize the entire patient, correcting fluid and electrolyte balance, relieving anemia, improving renal and cardiovascular deficiencies, and combating infection. Daily weight and measurement of fluid intake and urinary output are followed carefully.

Occasionally, marked diuresis may occur; water and electrolytes must be replaced around the clock, using intravenous fluids containing sodium chloride, potassium chloride, sodium lactate, and others through a plastic vein catheter.[18–20] The urine output is measured hourly and the rate and content of continuous intravenous infusion adjusted accordingly. Blood electrolytes should be checked every twenty-four hours and sometimes oftener. In severe hyperchloremic acidosis, 5 per cent sodium bicarbonate or one-sixth molar sodium lactate solutions are required. Potassium loss can be corrected by adding potassium to the saline intravenous infusion, depending on the prevailing potassium blood level.

Rarely, hypocalcemia is present due to calcium binding by the retained phosphorus in renal insufficiency. Calcium gluconate is given intravenously, if necessary, but if the patient can retain oral feedings, a liberal milk intake should suffice. Dietary requirements in the anorectic hypoproteinemic patient may be given as a drip through a nasal tube. Preparations such as blenderized foods and Varco's mixture may be used.

The ideal goal of preoperative treatment, especially in the extremely dehydrated uremic patient, is an alert, hydrated, hungry, active, afebrile individual who has a good urinary output, stable blood chemistry levels, and a stable cardiac status, with or without digitalization.[21]

OPERATIVE AND POSTOPERATIVE MANAGEMENT

Differences of opinions and of comparable results are reported as to the value of bilateral vasectomy in conjunction with prostatic surgery. For some years now, this has not been practiced on this service, and the incidence of epididymitis following uncomplicated surgery is certainly no greater than during the period when vasectomy was performed. However, there is a definite relationship of an increased incidence of epididymitis where there has been prolonged preoperative or postoperative urethral catheter drainage for various reasons or where there has been repeated postoperative instrumentation for postoperative bleeding of immediate or delayed (ten to fourteen days or so) origin.

The choice of open operative procedure is influenced mainly by the size of the gland but also by complicating factors such as diverticula, tumors, or calculi. However, at least 85 to 90 per cent of the prostatic surgery done on our service is accomplished transurethrally. The surprising lack of untoward effect on an elderly enfeebled patient by a low spinal ("saddle block") anesthesia and a skillful resection is gratifying.[11,22] The patient is out of bed the evening of surgery and as often as possible thereafter. The use of elastic leg wrappings and bed exercises, encouragement of frequent deep breathing and coughing, and early ambulation are of paramount importance, especially on the day of surgery. Need for replacement of blood loss during surgery or in the ensuing twenty-four hours depends on clinical judgment and results of the blood counts taken a few hours after surgery and the next morning. Blood volume determinations by using isotopes are a simple matter and much more accurate. Continuous irrigation with normal saline solution, using a closed sterile system, is employed postoperatively until the morning after surgery. This serves to maintain a patent catheter channel by eliminating minor exudation of blood from the resected bed, but, primarily, all active bleeding must be controlled at the time of the resection.

For open surgery, subtotal retropubic prostatectomy under spinal anesthesia is our method of choice for prostates over 40 gm. in good surgical risk patients, where calculi over 4 cm. exist, or where sizable diverticula are present. Also, if open surgery is feasible, permanent relief is almost always obtained in those patients with marked vesical neck contractures and usually small prostates by forming a Y-V and enucleating the hyperplastic tissue. Adequate fluid intake up to 3,000 ml. daily is attained by oral or parenteral fluids, or both. Post resection, oral fluids are almost always tolerated on the day of surgery, and food intake is increased thereafter according to the patient's tolerance. However, following open prostatic (or any open urologic) surgery in these elderly patients, nothing by mouth is given for a few days (usual average, three days). Before oral intake is allowed, active bowel tones must be present and the patient should be passing flatus. Sulfonamides and antibiotics, parenterally, orally, or both, are given for the first five days, then oral sulfonamides, nitrofurantoin (Furadantin), or methenamine mandelate (Mandelamine) are given at least two weeks or longer as indicated. The urethral catheter is removed by the morning of the third postoperative day, and the patient is catheterized for residual urine late that afternoon.

The late postoperative treatment usually covers several months of follow-up examination. Periodic urethral calibrations to prevent or correct stricture formation, re-checks for residual urine, and medication with liberal fluid intake for persistent pyuria are the common procedures used. Occasionally, severe bladder or kidney infection will demand more intensive therapy.

CONCLUSION

In summary, the patient with lower urinary tract obstruction or benign prostatic hypertrophy has a bright prognosis today. With antibiotics, chemotherapeutic drugs, better anesthetic technics, increased understanding of fluid and electrolyte balance, refinements of operative technic, and modern instruments, the dread and complications of prostatic surgery have been greatly minimized.

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FETAL presentation of face or brow need not rule out vaginal delivery if the complication is recognized early and managed properly. During early labor, uterine contractions and physical status of both mother and child should be evaluated frequently. Prolonged labor interferes with vaginal delivery only if it goes beyond eight hours in multiparas or eighteen hours in primiparas. Either presentation is possible when the head remains high during labor or the cephalic prominence is palpated on the same side as the back. About 60 per cent of face and 50 per cent of brow presentations are delivered spontaneously. Rotation, flexion, or further extension of the head may change the presentation. Forceps deliveries are usually by low or outlet application, and primiparas are most likely to require cesarean section, especially if the fetus is in the mentoposterior position. Face presentations occurred 50 and brow, 34 times in 29,509 deliveries. No maternal deaths occurred but 14 infants died, 8 with face and 6 with brow presentation.

LOREN J. JACOBSON and CARL E. JOHNSON: Brow and face presentations. Amer. J. Obstet. Gynec. 84:1881-1886, 1962.

GRANULATING burn wounds can be closed initially with a sponge of polyvinyl alcohol (Ivalon), which permits less protein loss than nonadherent dressings. As long as the surface tissue of a debrided wound is viable, granulating tissue will permeate and hold the sponge. After a time the sponge is removed in pieces, leaving a flat, uniform surface, which takes autografts well. The sponge has been used in 4 children with third-degree burns of 30 to 50 per cent of the body surface.

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Treatment of Chronic Disease of the Lung with Prolonged Low Dosage of Oxytetracycline

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THE NEED for measures to bring about relief to sufferers of chronic lung disease has long been recognized by the medical profession. The possibilities of various treatments have been well summarized by Livingstone.[1] Pridie and associates[2] reviewed previous experimental work in which 4 different groups of investigators found that daily doses of 1 gm. or more of oxytetracycline or tetracycline improved the well-being of patients with chronic bronchitis. They found no improvement in their patients given 0.5 gm. daily. Murdoch and associates[3] treated 26 patients with 1 gm. of oxytetracycline daily for six months and found 23 to be improved. Edwards and associates,[4] using 1.5 gm. at the beginning of treatment and varying doses as indicated by clinical response, reported 21 of 29 patients to be improved after prolonged treatment and believed this to be an excellent method of controlling the disease.

If smaller amounts of oxytetracycline could bring about the same clinical improvement, the expense to the patient would be reduced and any possible toxic effects of prolonged use of the antibiotic would be lessened. However, low doses of antibiotics have been thought to encourage the outgrowth of resistant flora. Therefore, 2 groups of patients, both on low doses of oxytetracycline, were studied for clinical response and for change in the number, kind, and resistance of the bacterial flora of their sputum.

METHODS

Twenty-two patients with long-standing, severe pulmonary disease were studied. Their ages ranged from 25 to 81 years. In 6, the diagnosis was bronchiectasis with associated emphysema; in 13, emphysema; in 2, bronchiectasis; and in 1, congenital cystic disease of the lung. All were treated with 250 or 500 mg. of oxytetracycline (Terramycin) daily for six months. A hematocrit reading, a hemoglobin determination, and white blood cell and differential counts were done before and after treatment. Twenty-four-hour sputum specimens were submitted for bacteriologic study before treatment, two weeks after treatment had started, and at monthly intervals for six months during the treatment. The volume, color, and consistency of the sputum; the clinical condition of the patient; and the patient's own evaluation of his response were noted by the clinician.

Sputum specimens were examined for particles of pus and, if found, this portion was streaked on a blood and a chocolate agar plate. The predominating organism(s) and any of the following potentially pathogenic bacteria were isolated and identified: β hemolytic streptococci, pneumococci, staphylococci, Hemophilus influenzae, enteric bacilli, or yeasts. The relative number was recorded as large, moderate, or scant. Enterics were streaked on Mueller-Hinton agar, the gram-positive cocci on blood agar, and Hemophilus influenzae on chocolate agar. Sensitivity tests were performed by the disk method. If a zone of growth inhibition of any size was observed, the organism was considered sensitive. Five- and 30-μg. disks of tetracycline, oxytetracycline, and demethylchlortetracycline were used. Tube tests on a number of the organisms indicated that sensitivity to the 30-μg. disk could be interpreted as sensitivity to 12.5 μg. or less of the antibiotic in brain-heart infusion broth. Of the 398 organisms which were isolated and identified, sensitivity tests were done on all but 20. Most of the 20 were yeasts.

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TABLE 1

CLINICAL RESPONSE OF 22 PATIENTS WITH CHRONIC RESPIRATORY DISEASES TO OXYTETRACYCLINE (250 or 500 mg. daily)

	Number	*Per cent*
Reduced sputum volume	18	82
Reduced cough	6	27
Fewer colds	10	45
Weight gain	9	41
Subjective improvement	20	91

RESULTS

Since there appeared to be no significant differences in the responses of the 2 groups, and as the number of patients was not large, results were analyzed for the whole group. These patients served as controls as well as an experimental group, since all of them had been observed clinically for twelve months or more previously by one of us (D.B.S.) and no improvement had been observed with various kinds of treatment. Specimens were submitted regularly and all but 4 completed the six months' treatment. There were no changes in the hematocrit reading, hemoglobin, white blood cell count, or differential cell count of any of those treated. Table 1 shows the clinical response for the 22 patients treated. Subjective improvement was reported in 91 per cent. Objective signs, such as reduction in volume of sputum, fewer colds, less coughing, and a gain in weight, were observed in certain patients in each group. Eighty-two per cent had reduced sputum volume and 41 per cent gained weight.

An attempt was made to determine whether prolonged treatment with small doses of oxytetracycline would develop a resistant flora in the sputum. Table 2 summarizes these findings. The nonpathogenic Streptococcus viridans (green-producing streptococci proved not to be enterococci) was found most often to be the predominating organism. Another nonpathogen, Neisseria pharyngis, occasionally predominated but was usually outnumbered by streptococci. Diphtheroids, coagulase-negative staphylococci, lactobacilli, and Streptococcus lactis were also found. In the 163 sputum specimens studied, the following potential pathogens were found (in order of decreasing frequency): (1) Hemophilus influenzae; (2) Aerobacter aerogenes and Klebsiella pneumoniae; (3) yeasts (a few of which were Candida albicans) and β-hemolytic streptococci (most of which were not group A); (4) Escherichia coli; (5) coagulase-positive staphylococci; (6) Alcaligenes fecalis; (7) Mima polymorpha, intermediate coliforms, and paracolon; (8) Proteus mirabilis, Pseudomonas, and pneumococci. Sixty-eight per cent of those treated showed the predominating bacterial species to be more resistant at some time during treatment than they were before treatment. However, only 31 per cent showed either the predominating organism or the potential pathogen to be resistant to the 30-μg. disk. Disease produced by an organism resistant to the 30-μg. disk will not usually respond to treatment with this antibiotic. There were only 4 of the 22 in which the normal flora appeared to have been replaced by yeasts, staphylococci, or enteric bacilli. These patients did not suffer any discomfort clinically from the "new" flora.

All organisms had essentially the same susceptibility to oxytetracycline, tetracycline, and demethylchlortetracycline, except a small percentage which were resistant to the 30-μg. disk of oxytetracycline but were sensitive to the 30-μg. disk of demethylchlortetracycline.

DISCUSSION

The clinical findings in this study of 22 patients are essentially in agreement with those reported by Murdock and associates.[3] They found that 25 per cent of a group of 40 patients with chronic bronchitis who received placebos were subjectively improved, while 90 per cent of 26 receiving 1 gm. of oxytetracycline daily were improved. They reported that oxytetracycline brought relief from symptoms of bronchitis when given throughout the winter season.

It is interesting to speculate about the almost universal claim by the patients in our own study that the frequency and severity of "colds" were cut to levels far below their individual averages for the winter. Some of them maintained they were free from all colds during the time they

TABLE 2

BACTERIOLOGIC RESPONSE OF PATIENTS WITH CHRONIC RESPIRATORY DISEASE TO OXYTETRACYCLINE (398 organisms from 163 sputum specimens)

	Number	*Per cent*
Predominating organism more resistant to oxytetracycline during or after treatment than before treatment	15	68
Predominating organism or potential pathogen resistant to 30-μg. disk after six months' treatment	7	31
Moderate or large numbers of gram-negative bacilli, staphylococcus, or yeasts during or after treatment	13	59
Normal flora appearing to be replaced by coliforms, staphylococcus, or yeasts	4	18

were taking the antibiotics. Upper respiratory infections ("cold") have been assumed to be initiated by viral invasion; complicating factors, such as sinusitis and purulent nasal discharge, have been thought to be the result of bacterial overgrowth. This synergism between virus and bacteria has been previously noted by Eichenwald.[5] He described the "stuffy-nose syndrome" in premature infants, that is, intermittent or continuous mucoid nasal discharge without systemic manifestations of infection. The condition existed only in infants with both virus and bacteria. The infants who harbored one or the other in the nose were healthy, and only in combinations was the syndrome symptomatic. By decreasing bacterial flora, it may be that the integrity of the nasal passage is improved and offers more resistance to viral penetration. These patients then remain asymptomatic.

Pneumococci and Hemophilus influenzae have been incriminated as the cause of acute exacerbations of bronchitis by several investigators[6-9] because they have been found most frequently in large numbers in purulent sputum. Pneumococci were not often isolated in our own study, but Hemophilus influenzae were often observed before the completion of, but seldom after, treatment. It cannot be determined whether this reduction in Hemophilus influenzae was due to the treatment or whether the warmer months at the end of the test period contributed to its disappearance. Harvey and Dunlap,[10] however, were unable to show any appreciable difference in the presence of this organism during any given month.

A direct relationship between the presence and number of pathogenic bacteria in sputum and clinical evidence of bronchitis has been questioned by Brumfitt and associates[7] and Lees and McNaught.[8] They have suggested that sputum will contain all the upper respiratory flora and, unless the organism is found in only the lower tract, as indicated by sampling bronchial secretions, that their presence has no relation to the disease. The same organisms are found both in healthy individuals[10] and in those suffering from acute respiratory infections.[11] However, if the pneumococcus, Hemophilus influenzae, and other organisms present in the upper respiratory tract are responsible for disease when they become established in the bronchi, a study of resistance in these organisms from the sputum would be likely to follow the same pattern as those localized in disease areas. It would also seem likely that a greatly increased number of potential pathogens in the upper respiratory tract, particularly in the absence of the normally encountered nonpathogens, might lead to greater possibility of infection of the lower respiratory tract in susceptible individuals. This has been tacitly assumed by some when resistant coagulase-positive staphylococci have been cultured in large numbers in the sputum, but documentation of the subsequent development of bronchitis and pneumonia due to these organisms has not been sufficient to indicate whether they present a real danger or not.

In this study, long-term treatment with oxytetracycline was accompanied by some increase in the resistance of organisms in the sputum. In 4 of the 22 patients, the usual flora was replaced, at least partially, by coliforms, staphylococci, or yeasts. In no case, however, was this followed by clinical changes. The number of potential pathogens isolated during treatment was small. No reactions requiring withdrawal of the antibiotics were reported, and there were no changes observed in the studies of the blood. Since results with low dosage (500 mg. or less, daily) appeared to be as good as those previous-

TABLE 3

FREQUENCY OF APPEARANCE OF POSSIBLE PATHOGENS IN SPUTUM OF PATIENTS TREATED WITH OXYTETRACYCLINE

Time specimen taken	*Coliforms*	*Coagulase-positive staphylococci*	*β-hemolytic streptococci*	*Pneumococcus*	*Hemophilus influenzae*	*Yeasts*
Before treatment	7/22*	0/22	3/22	1/22	5/22	4/22
2 weeks	8/22	2/22	1/22	0/22	1/22	1/22
1 month	4/22	2/22	3/22	0/22	4/22	0/22
2 months	9/22	1/22	3/22	0/22	3/22	3/22
3 months	6/20	1/20	1/20	1/20	5/20	3/20
4 months	8/19	0/19	0/19	0/19	2/19	1/19
5 months	10/18	1/18	1/18	1/18	0/18	2/18
6 months	9/18	1/18	3/18	2/18	1/18	1/18

*The numerator represents the number of patients from whom the organism was isolated. The denominator represents the number of patients sampled.

ly reported with high dosage, the decreased expense might lead to a better acceptance of this method of therapy, if it proves to be as satisfactory as the present evaluation would indicate.

SUMMARY

Twenty-two patients were alternately treated with 250 mg. or 500 mg. of oxytetracycline daily for six months. The clinical response was excellent in most patients of both groups. The development of some bacterial resistance was observed, and, in a few patients, the flora usually found in the sputum was replaced by resistant pathogens, but no clinical difficulty due to this was observed. Laboratory tests revealed no blood changes in any of the patients after treatment.

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RECURRENT anterior dislocation of the shoulder can be corrected by the Bankart operation or the Putti-Platt procedure with only moderate limitation of external rotation. Residual pain is relatively infrequent and seldom disabling. With the patient supine, an incision is made in the deltopectoral groove and the cephalic vein is ligated. Muscles are detached from the coracoid process, and the subscapularis is divided about 2 cm. from its insertion. The muscle tendon is then dissected from the joint capsule and the capsule incised and retracted. The distal portion of the subscapularis is sutured to the proximal capsule, and muscle and capsule are plicated. The proximal portion of the subscapularis tendon is sutured laterally in the region of the bicipital groove, and the coracobrachialis is reattached to the coracoid process. The patient is placed in a special frame, a Velpeau dressing applied, and the shoulder immobilized in internal rotation and adduction for four weeks, then mobilized and exercised. In the Putti-Platt procedure, muscle and capsule are overlapped more extensively. Only 1 of 74 patients had further dislocation after operation. Residual pain was reported by 26 patients. External rotation was often limited, but only 4 patients experienced difficulty in common daily tasks and 22 were limited in more strenuous activity.

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The Surgical Treatment of Cerebral Arterial Insufficiency

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"THE COMMONEST cause of cerebrovascular insufficiency is arteriosclerotic involvement of the caroticovertebral system."[1] Other causes of arterial obstruction include syphilis, tuberculosis, collagen vascular disease, periarteritis nodosa, thromboangiitis obliterans, rheumatic fever, and trauma. No age group is immune—Fisher and Friedmann[2] have reviewed reports of 17 children with carotid artery thrombosis.

ADVANCES IN UNDERSTANDING OF CEREBRAL ARTERIAL INSUFFICIENCY

The segmental nature of atherosclerosis and the frequency of extracranial occurrence in patients with cerebral arterial insufficiency have not become generally recognized until recent years. Broadbent[3] in 1875 made the following observations: ". . . the innominate was found not only to be narrowed at its origin, but rigid. An atheromatous patch surrounded the mouth of the vessel involving the structures both of the aorta and the innominate; it was hard and brittle, without being distinctly calcareous, and separated readily from the outer tunic. Immediately above its origin the innominate enlarged to its usual size, and possessed its normal elasticity. Here, then, was the explanation of the absence of pulse with a full vessel at the right wrist."

In 1905, Chiari[4] published results of 400 postmortem examinations of the carotid vessels. Severe atherosclerosis was often present, particularly in the region of the carotid sinus. The branches of these vessels were relatively normal. Seven atheromatous carotid sinuses contained thrombi. Four of these had been sources of cerebral embolism. One internal carotid artery was filled at its origin by a thrombus. Chiari recommended examination of the carotid vessels in all pertinent cases.

Hunt,[5] in 1914, reported diminished pulsation of the carotid artery on the side of the cerebral lesion in some elderly hemiplegic patients. He reasoned that, contrary to tradition, collateral circulation available through the circle of Willis was inadequate in patients having "weakened hearts and sclerotic vessels" and that cerebral intermittent "claudication" (ischemia) and cerebral infarction were frequently due to obstructive lesions of the innominate and carotid arteries in the neck rather than to lesions of the intracranial arteries.

Cerebral arteriography was introduced, in 1927, by Moniz[6] for the localization of brain tumors. He demonstrated internal carotid artery thromboses in hemiplegic patients by this technic in 1937. These accomplishments were, unfortunately, slow to gain recognition.

In 1942, Hultquist[8] found that 2.9 per cent of 1,300 unselected autopsy subjects had thrombosis of one or both carotids. About ten years later, Fisher[9,10] stated: "Occlusion of the internal carotid artery is much commoner than has heretofore been believed. The carotid sinus is the region of predilection. The basic pathological process is atherosclerosis." Advanced carotid artery disease was present in 9.5 per cent of 432 routine autopsy subjects. The intracranial vessels were relatively normal. Like Chiari, Fisher stressed postmortem examination of the cervical vessels.

Johnson and Walker,[11] in 1951, reviewed 107 angiographically proved cases of carotid obstruction and found that the neurologic symptoms began suddenly, with severe deficit, in 35 per cent, occurred transiently in 40 per cent, and progressed slowly in 25 per cent.

ADVANCES IN ARTERIAL SURGERY

The first permanent union of 2 blood vessels was accomplished in 1879 by Eck,[12] a Russian surgeon. Until 1900, according to Dorfler, only 9 arteries in man had been successfully repaired by direct suture. At that time, Garre reported 2 more successes, one being the suture of one of the common carotid arteries during removal of a tumor. The patient recovered but died in a few months. No postmortem examination was

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made. After reviewing this case, Guthrie[13] wrote: "It is observed that no symptoms attributable to occlusion were seen. Now it is known that in man ligation of one of these arteries is not necessarily followed by symptoms of circulatory deficiency. So it must be concluded that the observation reported proves nothing so far as preservation of patency of the arterial lumen is concerned."

Men such as Carrel, Guthrie, Goyanes, Leriche, Lexer, Levin, and Larkin pioneered the field of autoplastic, homoplastic, and heteroplastic vessel transplantation of both fresh and preserved specimens. Carrel,[14] working at the Rockefeller Institute in New York, succeeded in replacing animal thoracic aortas with paraffin-lined glass and aluminum tubes but experienced a high incidence of delayed thrombosis. Succeeding investigators, using paraffin-lined silver, glass, vitallium, and silicone-coated polyethylene tubes, had the same difficulty.

Guthrie,[15] in 1919, finally concluded, from experimental data obtained from arterial implantation of formalinized venous grafts, that "to restore and maintain function, an implanted segment need only temporarily restore mechanical continuity and serve as a scaffolding or bridge for the laying down of an ingrowth of tissue derived from the host."

In spite of the observations of Chiari and Hunt and the introduction of cerebral angiography by Moniz, there were few attempts at repair of the carotid arteries for relief of cerebral dysfunction until the middle part of the century. There was an abundance of carotid ligations for the treatment of pulsating exophthalmos, and some cervical sympathectomies were done.

In 1947, dos Santos[16] described the technic of thromboendarterectomy and it soon gained acceptance in Europe. That same year, Hufnagel[17] published experimental results of the use of polished methyl methacrylate intubation of dogs' thoracic aortas. There was a low incidence of thrombosis, but the material was rigid and difficult to manage.

Kunlin and associates,[18] in 1951, described a new method for restoring blood flow in lower extremities with popliteal artery thrombosis. The occluded segment of each artery repaired was split open and an opened segment of autologous saphenous vein longitudinally sutured onto it. This formed, in effect, a large collateral channel at the site of occlusion which permitted preservation of existing collateral vessels, a feature extremely important if thrombosis of the graft occurred. Blood flow was restored in all 17 arteries operated upon. Three graft thromboses occurred within two weeks of surgery, 3 occurred in succeeding months, and 2 grafts ruptured. The authors attributed this success to the large lumen formed by the graft, use of the recently introduced heparin and bishydroxycoumarin (Dicumarol), and the suturing technic.

The freeze drying or lyophilization method of homograft preservation, introduced in 1951 by Marrangoni and Cecchini and by Natellis and Visalli, made arterial homograft banks practicable.[19]

Voorhees and associates,[20] believing, as had Guthrie, that nonviable homografts served only as a scaffolding for fibrous tissue replacement from the host, reasoned that nonreactive fabric tubes might make a desirable framework and, with this material, Vinyon N, achieved the first satisfactory prosthetic grafts. Most surgeons disregarded their success until 1954, when more results were published.[21]

In 1953, thromboendarterectomy of the internal carotid artery was performed, without success, by Strully and his associates.[22] A year later, Ochs and associates[23] followed the suggestion of Beck, in 1949, and attempted to revascularize the brain by establishing a cervical arteriovenous fistula. A common carotid-internal jugular anastomosis was created on the side of a patient's occluded internal carotid artery. No improvement was seen and the patient died one year later when the opposite internal carotid thrombosed.

In the same year, DeBakey and associates[24] reported the treatment of 22 patients with occlusive disease of the aorta by resection of the bifurcation and replacement with a lyophilized aortic homograft. Dramatic improvement was seen in 18 patients.

SUCCESS AT LAST

The first successful treatment of cerebral arterial insufficiency was published by Eastcott and associates[25] in 1954. Using 28° C. hypothermia, the common carotid was occluded for twenty-eight minutes while the bifurcation and its occlusive plaque were resected and continuity was restored by end-to-end anastomosis of the patent distal portion of the internal carotid to the common carotid. The patient's preoperative daily attacks of transient blindness, aphasia, and right hemiparesis did not recur in the five-month period following operation.

In 1955, Carrea and associates[26] reported treatment of a patient with intermittent aphasia and paralysis and angiographically diagnosed severe internal carotid stenosis. The obstructed segment was resected and the external carotid was anastomosed end to end to the distally patent portion of the internal carotid. Hypothermia was not used. The patient had no recurrence of symptoms.

Staged resection of the carotid bifurcations, with insertion of lyophilized arterial homografts bilaterally, was performed on one patient by Denman and associates[27] in 1955. Blood flow was restored in one internal carotid, but the patient did not improve.

Crawford and DeBakey,[28] after having tried endarterectomies in the lower extremities with thrombosis often resulting, concluded that, for all but well-localized lesions, the collateral graft principle of Kunlin and associates[18] was superior. Wishing to preserve existing collateral vessels even more completely than had Kunlin, they installed lyophilized arterial homografts which completely bypassed the occluded arterial segments. Circulation was restored without postoperative thrombosis in 37 of 40 lower extremities operated upon.

Webster and associates,[29] in 1956, excised the atheromatous segment and reconstructed the carotid bifurcation in 3 patients; in each, thrombosis occurred postoperatively.

Thromboendarterectomy, for an incomplete carotid obstruction producing a swishing head noise and dizziness on standing, was done by Cooley and associates[30] and resulted in restoration of circulation. The head was immersed in crushed ice, and a temporary polyvinyl shunt was needled into the common and internal carotids to permit arteriotomy. The presenting complaints were corrected, but the patient was paralyzed after operation.

A patient with recurrent left facial pain and right hemiparesis was treated by Lin and associates.[31] During twenty-two minutes' occlusion the diseased segment of the internal carotid artery was resected and replaced by a saphenous autograft. No hypothermia was used. Although flow was restored, no significant clinical improvement was seen.

Edwards and Rob[32] reported treating the captain of a large ocean liner who suffered increasingly severe attacks of aphasia and right hemiparesis. A constricted segment of the internal carotid was excised and the common and internal carotids were directly anastomosed while the body temperature was 28° C. The patient recovered completely and was promoted to shore duty only because of public concern.

Innominate thromboendarterectomy corrected symptoms of cerebral and upper extremity ischemia in a patient with Martorell's syndrome. This was performed by Davis and associates[33] in 1956.

Lyons and Galbraith,[34] in 1957, seeking to minimize effects of occlusion during arteriotomy without the use of hypothermia, treated 5 patients with crimped Nylon subclavian-to-internal carotid shunts. Two had complete carotid occlusion. In all 5, carotid flow was restored with clinical improvement. No occlusions occurred after operation; 1 patient died of basilar insufficiency.

Internal carotid thrombectomy was employed by Gass and Smathers[35] in 1957. A hypertensive woman with episodes of hemiparesis was treated. Her obesity prevented obtaining a temperature lower than 34.7° C. rectally, but she tolerated a total occlusion of the internal carotid for ten minutes. Nine months following surgery, carotid flow continued and the patient had no neurologic deficit, despite the fact that anticoagulant therapy was not used.

Rob and Wheeler[36] described localized resection and end-to-end anastomosis as done by Eastcott and associates[26] in 1954. They injected heparin into the clamped vessels and used small stitches to avoid narrowing the lumen. In all 11 patients with partial carotid occlusion, flow was re-established without any clinical deterioration following surgery; 6 patients improved. Of the 16 with complete occlusion, flow was reestablished in 4 but no improvement was seen.

In 1958, Gurdjian and Webster[37] reported angiographically proved internal carotid occlusion in 125 patients since 1950. Sixty arteries were exposed and in 57 the distal internal carotid remained occluded after removal of even a recent thrombus. They chose to do endarterectomies for 3 reasons: (1) It was often difficult to suture a graft to the brittle atheromatous distal segment of the internal carotid artery, (2) the external carotid was too valuable a collateral to sacrifice for use as a shunt, and (3) prosthetic grafts such as crimped Nylon had not been proved satisfactory. Five partially occluded carotid arteries were endarterectomized through a longitudinal arteriotomy. Anticoagulants were used postoperatively. Three of the 5 vessels remained patent, angiographically, for at least two months.

REVIEWING THE LITERATURE

Luessenhop[38] wrote in July 1958: "The reports of successes of thromboendarterectomy, vascular grafts, and external to internal carotid anastomoses are restricted to the groups of intermittent and gradual onset. The results are still too meager and follow-ups too brief for critical evaluation." He pointed out the even greater inadequacy of the results of cervical sympathectomy.

Finding the cleavage plane between the intima and the media was labeled the most crucial step in endarterectomy by Murphey and Miller[39] in 1959. They used local anesthesia so that the patient's neurologic status might be observed. A shunt was always ready but rarely used. Simply raising the blood pressure and lowering the patient's head during endarterectomy prevented cerebral depression in patients with old complete obstruction of one carotid and severe stenosis of the other. On removal of the atheroma, the distal intima was routinely sutured to the vessel wall to prevent dissection; 22 arteries were repaired. Retrograde flow was obtained in 6 of 14 complete occlusions and in all 8 partial occlusions. Of the 14 arteries in which retrograde flow was obtained, 7 remained patent for at least one month after operation, with continued improvement in most patients. One patient who did not benefit from surgery was a 16-year-old boxer with a subintimal clot causing the carotid obstruction. These surgeons used anticoagulants postoperatively, believing that it was "better to have a postoperative hemorrhage in the neck than thrombosis at the operative site."

Arteriographic studies by De Bakey and associates[40] revealed extracranial arterial occlusion in 42 per cent of patients with "manifestations of arterial insufficiency of the cerebrum and upper extremities." The occlusions in these patients were divided into two groups: the proximal type, in which branches of the aortic arch were involved, and the distal type, in which the origin of the internal carotid or vertebral artery was involved. He found that, even in complete occlusions of the proximal type, the artery was usually patent distally, allowing operative restoration of circulation. Of occlusions of the distal type, those which were incomplete were operable, but complete occlusions, unless very recent, were found to have thrombosis extending well into the intracranial portions of the vessels.

Two procedures were employed to restore blood flow: (1) endarterectomy for well-localized lesions, and (2) end-to-side bypass grafts for more extensive ones. Proximal type occlusions usually required a bypass graft from the ascending aorta to the patent distal segment of one or more involved arteries. The grafting material was of knitted Dacron. Endarterectomy was usually possible in cases of distal occlusion. Local anesthesia was used to prevent cerebral depression and reduction in blood pressure and to permit observation of any neurologic changes during operation. A trial five-minute clamping of the internal carotid artery was done before each repair. Temporary shunts were necessary only in those patients with contralateral, complete carotid occlusion. To prevent luminal narrowing, transverse arterial incisions or Dacron patches were sometimes used.

Seventy-five obstructive lesions were repaired surgically. Circulation was restored in all patients with lesions involving the great vessels arising from the aortic arch, 97 per cent of those with operable lesions of the internal carotid artery, and 60 per cent of those with occlusions of the vertebral artery. Correspondingly, all patients with lesions of the great vessels were completely relieved of symptoms, and the majority of patients with lesions of the internal carotid and vertebral arteries were either relieved or improved. The success achieved by these operations was found to be "well maintained" at the time of writing. The authors stated that "due to the limitations of diagnosis in patients with the distal forms of the disease, all patients with manifestations of cerebral arterial insufficiency in whom proximal lesions are not suspected should be studied by arteriography as soon as possible after an attack of cerebral arterial insufficiency."

Bahnson and associates[41] found that endarterectomy was the procedure of choice in treating upper carotid obstruction and bypass or direct replacement the preferred treatment for obstruction near the origin of the vessels from the aorta. In operations requiring temporary occlusion of the carotid artery, cerebral ischemia was minimized by 28° C. hypothermia in 1 patient and by a temporary bypass cannula in 2. In all instances, the factor considered most important was that time of endarterectomy was kept short, often less than five minutes. Eight of 10 patients with partial carotid obstruction appeared to improve as a result of operation, improvement in the other 2 being consistent with the expected progress of the disease. In none of the patients with complete carotid occlusion did significant improvement occur. Stenosis of the innominate artery was treated by resection of the lesion and replacement with a frozen, dried homograft in 1 patient and with a Nylon prosthesis in the other. Both patients were completely relieved of symptoms.

Freeman and Lippitt[42] angiographed 44 patients with cerebral insufficiency and found that carotid occlusion was twice as common in men as in women and that it was 1½ times more common on the left. Taking exception to the idea that the latter ratio is due to anatomic difference in the arteries, the authors pointed out that some patients with ischemia of the nondominant hemisphere are not sufficiently concerned to consult a physician. Twenty-six endarterectomies were done on 22 patients, with occlusion times of less than twelve minutes. Six of 11 patients with hemiparesis or hemiplegia of recent onset benefited from surgery, and 8 of 10 patients with episodic symptoms had complete relief postoperatively.

In March 1960, Gurdjian and associates[43] summarized results of treating patients with carotid occlusions. In 71 instances of complete occlusion, a segment of the artery was excised in the hope that the lack of pressure on the distal, occluded portion would forestall dislodgement of a portion of the thrombus intracranially. Cervical sympathectomy was done in 31 of these for the possible increase in collateral blood flow. Two of 8 intimectomies done for complete occlusion yielded retrograde flow. Of 23 intimectomies done for partial occlusion, 18 were patent at the time of writing.

Although Crawford and associates[44] demonstrated extracranial atherosclerotic occlusive lesions in 40 per cent of patients with manifestations of cerebral arterial insufficiency, lesions producing less than 50 per cent reduction in luminal diameter were found to be functionally insignificant.

Javid[1] divided his patients treated into 3 groups. All 30 with transient cerebral ischemia, or "little strokes," operated upon had a patent distal internal carotid; 25 were asymptomatic following surgery. All 7 patients with residual deficit from a stroke operated upon had occlusion of the internal carotid, extending intracranially. Patients with slowly progressive symptoms had multiple occlusive lesions of the carotid and vertebral arteries; internal carotid arterial flow was restored in all 4 such patients, and 2 improved considerably. Endarterectomy was done for localized lesions of the carotid artery. Local anesthesia and a longitudinal arteriotomy were used. Intimal suturing following endarterectomy was done in only 7 patients and the addition of a patch graft was thought unnecessary. Temporary shunts were used in the 4 patients with contralateral carotid occlusion. Because of extensiveness of 13 lesions, crimped Dacron bypass grafts were installed.

As recently as April 1961, Gurdjian and associates[45] stated: "With the present knowledge of the subject, endarterectomy involving the branches of the circle of Willis and its secondary and tertiary branches appears to be out of the question. On the other hand, endarterectomy of the carotid bifurcation, and possibly also of the vertebral system in the neck, offers some hope for success."

They emphasized the necessity of angiography of the intracranial as well as extracranial vessels to assure benefit from surgery. They stated that many asymptomatic people 55 to 75 years old have stenotic lesions in the carotid arteries. Of 720 angiographed patients with symptoms of cerebral ischemia, 41 per cent had occlusive lesions of the carotid and vertebrobasilar system. Flow was re-established in 20 of 26 lesions endarterectomized.

Fisher and Sachs[46] reported, in 1961, postoperative improvement in two-thirds of 26 patients with carotid artery occlusion. Most were treated by thromboendarterectomy and cervical sympathectomy; several Teflon replacement grafts were used. Several patients had transient hemiplegia, 1 had a fatal heart block, and 1 had aphasia resulting from arteriography under general anesthesia.

Echoing Luessenhop's conviction, Shillito[47] wrote in 1961: "The number of patients with extracranial stenotic lesions who have been treated by endarterectomy or bypass grafting is still quite small. The follow-up has not been long. Fair evaluation of the efficacy of these procedures, and the indications for performing them, can only come with time and the interest of many physicians and surgeons. Only when clinical impressions are documented by arteriography and more experience is gained with the localized extra-cranial plaque will it be possible to evaluate intelligently the relative success of medical and surgical therapy." Urging early investigation and treatment of patients with symptoms of cerebral ischemia, he cited a case of permanent hemiplegia, in a 30-year-old woman, which had resulted from a second stroke one month following inadequate carotid arteriography.

Thompson and Austin[48] reported 121 carotid endarterectomies in January 1962. Trial ten-minute clamping of the artery to be repaired was done to determine the necessity of a temporary bypass. Endarterectomies required ten- to twelve-minute occlusion of the vessel; while closing the arteriotomy, the vessel was clamped tangentially to allow flow. A Teflon graft onlay was needed to enlarge the lumen of 6 per cent of arteries repaired. Hypothermia was not used. Cerebral blood flow was restored in 98 per cent of patients with partial occlusion and 41 per cent with complete occlusion. During the follow-up periods, which averaged ten months' duration, functional improvement was seen in more than 90 per cent of patients with preoperative frank or transient strokes.

In reviewing 1,199 angiographic procedure done on 951 patients admitted because of cerebrovascular accidents, Lindner and associates[49] found that complications had occurred in only 2.4 per cent of these patients. They noted that the incidence of complication was higher when the atheroma was punctured and when patients had severe atherosclerosis.

Henly and associates[50] treated tortuosity and kinking of the internal carotid artery either by segmental resection with end to end anastomosis or division and reinsertion of the internal carotid into the proximal common carotid artery. All 6 patients with transient symptoms were relieved completely by surgery, and the condition of 1 patient who had prolonged partial aphasia before operation was unchanged.

Wisiol and associates[51] announced clinical improvement resulting from surgery in 15 of 30 patients seen having carotid artery occlusions. Eighteen endarterectomies and 1 graft bypass were performed. All patients who were improved following operation continued to be asymptomatic. Seven of these had angiograms two to four months after surgical treatment, and the arteries in 6 patients were patent. Anticoagulants were given for six to eight weeks postoperatively, without apparent untoward effects.

A NEW TECHNIC: ARTERIAL MICROSURGERY

Jacobson and associates[52] underlined the notable success of treating occlusion of the aorta and vessels of the lower extremities, joined more recently by successes in treatment of the carotid and vertebral arteries. They stated that surgical repair of the intracranial vessels had, so far, been unsuccessful because their diameters were less than 3 mm. They mentioned the attempts of workers such as Welch and themselves and described their new technic of microsurgery. A dissecting microscope, having a range of 6 to 40 power, was used in treatment of 2 patients. Thrombi were removed through 2-mm. transverse incisions. No improvement was seen, and the authors concluded that, among other things, their 7-0 silk suture was too coarse.

In the spring of 1962, I assisted C. R. Hitchcock, chief of the Department of Surgery at Minneapolis General Hospital, during repair of a partially occluded origin of the internal carotid artery. The atheromatous plaque appeared relatively diffuse. The vessel lumen was enlarged by simply grafting a Teflon patch onto the longitudinal arteriotomy. To permit blood flow during grafting, a short polyethylene tube having an internal diameter of 3 mm. was placed in the arterial lumen. Ligatures proximal and distal to the arteriotomy prevented leakage. The tube was removed through a nick in the common carotid. Occlusion time amounted to about four minutes. The patient had no recurrence of his transient ischemic attacks in the month following surgery.

Surgical treatment of cerebral arterial insufficiency, based on the foundation laid by experimental surgeons and clinicians early in the century, has advanced swiftly in the past eight years and will undoubtedly continue to do so, leaving in its wake new hope for patients with cerebrovascular disease.

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INTESTINAL ASSIMILATION of dietary fat is slightly impaired by partial gastrectomy with gastroduodenostomy. The impairment is significantly less, however, than that produced by partial gastrectomy with gastrojejunostomy. Steatorrhea after gastrectomy may be associated with vagotomy done during gastric resection. Exaggerated impairment after the Pólya procedure possibly is accounted for by diversion of the alimentary stream from the duodenum and upper part of the jejunum. Whereas fat excretion in healthy persons averages 8.7 gm. daily, patients with a Billroth I anastomosis excrete a mean value of 12.3 gm. per day. Patients with Pólya anastomosis excrete an average of 19.9 gm. daily. These data are based on studies of fat excretion in 13 normal subjects, 8 patients with partial gastrectomy and gastroduodenostomy, and 10 with partial gastrectomy and gastrojejunostomy.

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Persistence of Maternal Anti-Rh_0 (Anti-D) in an Rh-Positive Infant

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THE PERSISTENCE of free Rh_0 antibody (anti-D) in the serum of an Rh-positive infant for months after birth, poses a hazard to the infant. It should be carefully followed to assess fully the danger from the late anemia which occurs in a small number of infants with hemolytic disease of the newborn. The following case report illustrates the lengthy duration of this hazard.

REPORT OF A CASE

The fifth child of a mother with blood type A, cde/cde, was born after an uneventful, full-term pregnancy. The infant's blood type was A, CDe/cde. Initially, the infant appeared well, but anemia and jaundice were detected eighteen hours after birth. The patient's hematologic course is shown in table I. Anemia necessitated transfusions of 20 cc. of packed red cells on the eighth, ninth, and seventeenth days of life and 50 cc. of packed cells on the fortieth day of life. Despite the anemia, the infant remained active and gained weight steadily in the hospital. Supplemental oral iron and vitamin combinations were given daily after the age of 16 days.

The mother's first pregnancy had terminated at three months' gestation. At this time she received a pint of group A, Rh-positive blood because of associated bleeding. Subsequently, she delivered 5 children, the last being the patient. The first 2 siblings were without recognized hematologic abnormality at birth. The third and fourth siblings were of the same Rh type as the patient (CDe/cde) and exhibited mild hemolytic disease of the newborn. On the first day of life, the third sibling developed jaundice which persisted six days after birth, but no treatment was necessary. The fourth sibling developed jaundice and anemia shortly after birth, requiring one transfusion of 20 cc. of packed red cells. Subsequently this infant did well.

COMMENT

When an immunized Rh-negative mother bears an Rh-negative infant, the titer of free Rh_0 antibody in the infant's serum at birth is approximately equal to that of the mother's.[1] In some infants who have received a large amount of passively acquired maternal antibody, free antibody can be detected as long as twenty-four weeks after birth.[2] The concentration of this antibody in the infant serum decreases with a half-life estimated to be about eighteen days.[2]

However, when the infant is Rh-positive, antibodies passing through the placenta into its circulation are immediately bound to red cells and, according to Wiener,[3,4] free antibodies accumulate in the plasma only after the erythrocyte surface is saturated. In affected infants treated only by transfusion, the direct antiglobulin test has been recorded as positive in an exceptional case for as long as ninety-three days after birth.[5] The presence and persistence of free antibody in the serum of affected infants are less well known, although free antibody has been detected in one instance at one hundred eighteen days after birth.[6]

The persistence of free antibody in the patient's serum after birth suggests that the marrow may have been producing only a few new erythrocytes capable of absorbing antibody during this period, despite the presence of a rather severe anemia. The patient also illustrates the lengthy hazard to mildly affected infants who develop a late anemia and are treated by simple transfusions. As long as the infant's red cells are coated with antibody, the hazard remains.[4,6]

SUMMARY

This case of hemolytic disease of the newborn illustrates the capacity of free antibody to persist in the infant serum and to produce a late

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HEMATOLOGIC COURSE OF THE PATIENT

Days of life	*Hemoglobin (gm. %)*	*Bilirubin (mg. %)*	*Reticulocytes*	*Transfused (cc. of red cells)*	*Direct Coombs' test*	*Indirect Coombs' test*	*Coombs' titer (dilution)*
Birth 1							
2	14.1	12.1			4+	4+	256
3	11.8	14.6					
4	10.0	14.6					
5	7.9	9.6					
6	7.6						
7	5.7	9.1					
8	7.6*			20			
9	6.8		3.0	20			
12	6.7						
14	6.2						
16	5.4		3.0				
17	8.4*			20			
22	7.2						
38	4.6		7.1				
39	4.5	1.1	12.8		2+	3+	8
40	10.4*			50			
41	9.9						
66	8.5		5		2+	2+	
136	12.8		2.5		0	0	
168	11.4		1.2				

*Post-transfusion hemoglobin values

anemia requiring multiple transfusions, the last on the fortieth day of life. The antibody was easily detected on the sixty-sixth day of life, both on the infant's erythrocytes and in the serum, as free antibody.

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Hypertrophic Pulmonary Osteoarthropathy and Clubbing

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It was Hippocrates who first described clubbing of the fingers and toes in a patient with empyema. Not until the end of the nineteenth century did Bamberger and Pierre-Marie independently give their descriptions of hypertrophic pulmonary osteoarthropathy (HPO), which almost always is accompanied by clubbing of the digits.[1]

Clubbing is that phenomenon characterized by increase in the curvature of the nails, increase in the volume of the distal segment of the involved digit, fluctuance of the nail bed, and flattening of the normally obtuse angle between the proximal part of the nail and the soft tissue over its root. Clubbing is a painless process and usually occurs insidiously. Rarely will the patient list it among his complaints; in fact, he is usually unaware of its presence until his attention is directed to it.

CHARACTERISTICS

HPO is a syndrome characterized by periosteal new bone formation, with attendant swelling, bone pain, and stiffness and pain of the joints. The bone pain is frequently acute in onset, burning and deep-seated; it is made worse by lowering the extremities. There is usually a broadening or cylindrical appearance of the distal third of the involved extremities, produced by a firm, hardly-pitting edema. The skin over the involved area is warm, glistening, and red, and there is intense tenderness to pressure over affected parts with pain on passive motion of adjacent joints.[2] Though it is uncommon to find HPO without clubbing in the same patient, clubbing is very often found without HPO. Unlike patients with clubbing alone, those with HPO are painfully afflicted with their ailment. Oftentimes the patients' only complaints are those referable to the arthropathy, with the result that they are treated for arthritis, thrombophlebitis, and other conditions for variable periods before the underlying disease associated with it is recognized. Although any bone or bones may be involved, complaints typical of such a patient are pretibial and ankle edema, pain of the long bones and adjacent joints, and severe burning sensations of the soles of both feet and the lower parts of the legs. Lowering the extremity aggravates the pain; elevation brings relief.

The bones in HPO show periosteal new bone formation; the extremities are usually affected earliest and show the most advanced lesions. In the long bones of the arms and legs, the distal ends are involved first and the epiphyseal ends last. In the bones of the hands "collars" may form about the distal third of the metacarpals and first and second phalanges. Usually the process is symmetrical, although rarely it may be more prominent on the same side as that of the underlying lung lesion. The skull is least involved.[3]

Clubbed digits show edema of the soft parts of the distal phalanges, proliferation of fibrous tissue and thickening of blood vessel walls. The bone may show increased tufting or loss of the normal distal flare. There has been shown to be an increase in the number and width of arterioles covering the ungual phalanx of clubbed fingers. Edema within the connective tissue of the pulp has been demonstrated. This increased vascularity has been substantiated by postmortem angiography, capillarioscopic findings, and measurement of skin temperature and color and is further supported clinically by the observation that the bulbous, clubbed fingertips tend to collapse with elevation.[2]

The joints show thickening of the synovium with round cell infiltration and hydrarthrosis. They may develop fibrinoid degeneration of cartilage and loss of structure by advancement of pannus from above and fibrous marrow proliferation from below.[3]

In essence, the entire process is one of prolif-

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eration. Perhaps it is better to consider clubbing and HPO as part and parcel of one pathophysiologic process. Compere believes that there is no periosteal covering of the distal phalanges;[4] the soft tissue proliferation in clubbing could be the counterpart of the bony proliferation seen in HPO.

Since the time that these two entities were first described, much has been said and written about them. However, we are all so familiar with HPO and clubbing that we appear to know more about them than we actually do. For practical purposes one must consider HPO as being indicative of cancer of the lung until proved otherwise. It may precede lung cancer by one to eighteen months. Often such patients are treated for arthritis for long periods before the underlying disease is discovered. With resection of the tumor there is dramatic relief; pain is gone within twenty-four hours and often by the time the patient awakens from the anesthesia. The swelling subsides in four to five days and the clubbing should regress within five months. Some have even described resolution of the periosteal bone changes as seen on x-ray film. Vagotomy, hilar neurectomy, and, rarely, thoracotomy alone yield the same therapeutic results.[5,6] HPO is reportedly seen in 5 to 10 per cent of cases of bronchogenic carcinoma.[6] It is found most often in those tumors located in the lung periphery and which involve the pleura rather than the mediastinum. Sarcomas and other highly vascular tumors have a high incidence of associated HPO; the same is true of tumors with central necrosis. Pleural mesothelioma has the highest incidence of associated HPO.

If the arthropathy disappears with resection of the primary tumor, it is rare to have recurrence with local spread. However, recent reports show that this is not always so. There are even a few reported cases of HPO with metastatic lung tumors, but here also, the lesions were located peripherally and usually involved the pleura.[7]

Generally speaking, clubbing alone is associated with diffuse pulmonary disease and HPO with localized pulmonary lesions. Thus, HPO is seen with lung tumors, pleural tumors, lung abscesses and cysts, hemangiomas, and others. Clubbing is seen in patients with bronchiectasis, empyema, emphysema, and the mycoses. Tuberculosis is perhaps never a cause of HPO; moreover, clubbing is present less in this disease than was formerly believed, perhaps due to less suppurative complications.[4] Unilateral clubbing has been found in superior sulcus tumors and aneurysms of the proximal aorta and its branches. The most severe cases of clubbing are seen in cyanotic congenital heart disease, although HPO is extremely rare. In addition, clubbing has been sporadically reported in a variety of conditions including post-thyroidectomy myxedema, chronic diarrheal states, obstructive biliary cirrhosis, myelogenous leukemia, and syringomyelia. Clubbing in bacterial endocarditis is believed due to embolic occlusion of the vessels of the terminal phalanges.[8]

Mention should be made here of one other form of HPO, the idiopathic or familial variety. This syndrome is asymptomatic, is often associated with thickening of the skin and increased sweating of the extremities, and is not associated with any detectable underlying disease. Its pathogenesis is unknown and cardiac catheterization studies and arterial blood gas analyses are normal in these patients.[9]

THEORIES OF CAUSES

The cause of HPO is still unknown. However, there have been some interesting theories and experimental work in this field. Among the theories listed are:

1. Absorption of toxic substances from infected foci
2. Peripheral concentration of toxic substances by venous stasis
3. Peripheral hyperemia caused by compression of lung capillaries
4. Formation of toxins from impaired circulation
5. Anoxia
6. Endocrine imbalance
7. Neurogenic imbalance

None of these theories has any basis in reality. Mendlowitz[10] suggested that arterial desaturation and increased blood flow to the fingers with a decrease in the gradient of the brachial artery pressure played a part in the production of HPO.[8] He anastomosed the pulmonary artery to the left auricle in four dogs; this produced suggestive HPO in one of them. The procedure produced an increase in the cardiac output and a decrease in the arterial O_2 saturation. However, we see HPO in patients with normal arterial O_2 saturations, and other conditions associated with an increase in cardiac output are never accompanied by HPO.

Cudcowicz and Armstrong[11] examined the lungs of 15 patients with HPO. By injecting radiopaque material into these lungs they were able to demonstrate occlusions of major branches of the pulmonary artery in almost all cases, with the establishment of precapillary bronchopulmonary anastomoses which diverted bronchial blood into the low pressure pulmonary artery bed distal to the occlusion. They felt that the resulting lung ischemia set up impulses in the peripheral pulmonic nerve fibers which reflexly influenced the formation of arteriovenous fistulas in the limbs.

Recently Holling and Brodney[12] demonstrated that the overgrowth of connective tissue in HPO is associated with a localized increase in blood flow. By plethysmographic studies they showed that increased blood flow precedes the roentgenographic changes. The studies indicated that the increased flow is in bone and connective tissue rather than in skin and overlying muscle. During surgery (vagotomy, tumor resection) the blood flow in the limbs fell. On the seventh to tenth postoperative days the blood flow returned to normal levels. These studies, and those of Cudcowicz,[11] shed the most light on the problem.

The diagnosis of HPO will be made more often if we think of it more. Complaints of bone pain or arthralgia in a patient with carcinoma of the lung should be properly evaluated. In addition to the roentgenographic findings, the sedimentation rate may be elevated. Some relief may be obtained from steroids, salicylates, and phenylbutazone (Butazolidin). However, none of these will reverse the roentgenographic changes. If suppurative lung disease is considered to be the cause and treatment with the appropriate antibiotics does not relieve the signs and symptoms of the arthropathy, then the patient has to be re-evaluated and carcinoma becomes an even stronger probability.

The problem of HPO is more than an academic one; it is the commonest extrapulmonary sign of carcinoma of the lung. It often precedes all other evidence of lung cancer and if this is appreciated, it may considerably alter the course of the cancer-stricken patient.

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PROGNOSIS of granulosa-cell tumors of the ovary is difficult to determine. Recurrences are frequent and malignant change has been variously reported to occur in from 10 to more than 40 per cent of the lesions. Rare before puberty, granulosa-cell tumors make up about 5 to 10 per cent of all solid ovarian growths thereafter. Incidence is about equal in pre- and postmenopausal women. For young patients with well-circumscribed lesions, the tumor is probably adequately treated and childbearing function preserved by unilateral salpingo-oophorectomy. Contralateral organs must be removed, however, if malignant spread is a possibility, and radical resection of adjacent structures may be necessary. The efficacy of postoperative irradiation is questionable, but some benefit may be expected if the tumor is incompletely excised. Granulosa-cell tumor caused death within five years in 5 of 23 patients, and another died of bowel obstruction. Of the 17 who survived for five to twenty-six years, 2 died of cancer seven and twelve years after treatment.

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Epilepsy and the Cortisone-Glucose-Tolerance Test

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THE JUSTIFICATION for the study of carbohydrate metabolism in epileptic patients has been described by many investigators and is succinctly summarized in the following quotation:[1]

> . . . The possibility that there may be abnormality in carbohydrate metabolism in persons subject to convulsive disorders is suggested by the fact that convulsions and increased irritability of nerves accompany hypoglycemia produced by insulin in animals, by the reported marked diminution in glycogen content of the brain accompanying convulsions, and by the occasional clinical reports of patients who seemed to be better or worse following variation in the carbohydrate content of the diet.

The lack of a significant relationship between carbohydrate metabolism and convulsive seizures is summarized in the following statement:[2]

> . . . Aside from variability of results in initial and also in repeated measurements, it seemed that glucose played only a passive role with respect to convulsions. Among some 100,000 total admissions to Harriet Lane Home in Baltimore, there were only 15 with convulsions ascribed to hypoglycemia. Three were diabetic and two had adenoma of the islet. None of the 3,000 epileptic children whose blood sugar was measured had hypoglycemia.

It might well be that there is no cause-and-effect relationship between carbohydrate metabolism and convulsive seizures. On the other hand, significant relationships may indeed exist which have not been demonstrated for one or more reasons. First, most of the presently published studies have assumed that the present ranges for physiologic blood sugar and blood glucose are correct. This may well be a source of error since there is some evidence to indicate that physiologic blood sugar and glucose may embrace a much narrower range than is presently held.[3–6] Second, different results may be obtained through different methods for measuring carbohydrate metabolism. For instance, blood sugar and glucose may be determined fasting, postprandially, or under tolerance conditions.

There are recent reports which claim that the cortisone-glucose tolerance test may be a more delicate barometer of carbohydrate metabolism than any of the presently employed procedures. By this means, the prediabetic subject may be more readily detected than by the classical glucose tolerance procedure.[7–8] Epilepsy has been studied in terms of fasting blood sugar[9] and the classical glucose tolerance test.[1] No published reports are available to show the diagnostic utility of the cortisone-glucose tolerance test in the detection of early or subtle hypoglycemia, or both. Also, as far as possible, there appears to be no report on the relationship of the cortisone-glucose tolerance procedure and convulsive seizures.

This report, therefore, is designed to outline the cortisone-glucose tolerance test findings in comparable groups of unequivocally epileptic (grand mal) versus nonepileptic patients.

METHOD OF INVESTIGATION

During the course of study of the correlation of stomatologic findings and the cortisone-glucose tolerance test in 170 subjects,[10] 11 confirmed epileptic patients from the Department of Neurology of the University of Alabama Medical Center were examined. These subjects ranged in age from 15 to 50 and included 4 men and 7 women. It was possible to pair each epileptic patient with a nonepileptic subject of the same sex and age (table 1). The cortisone-glucose tolerance test was performed according to the Conn technic.[11]

RESULTS

Table 1 summarizes the data obtained for the 2 groups. The figure shows in graphic form the mean blood glucose levels, initially, at thirty minutes, and at one, two, and three hours. It is noteworthy that, at every temporal point, the mean

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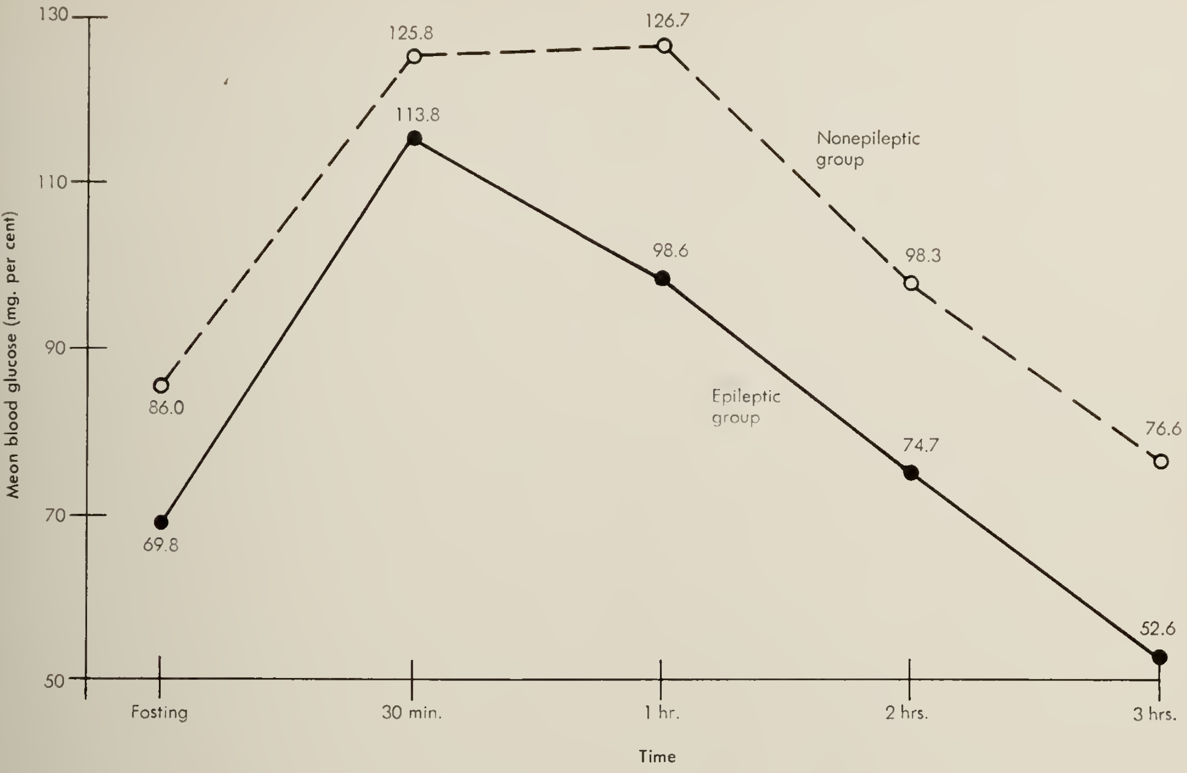

Comparison of cortisone-glucose tolerance test in 11 paired epileptic and nonepileptic patients

blood-glucose scores were lower in the epileptic group. The differences of the means at each temporal point are significant in every case but the thirty-minute determinations:

	P
Fasting	< .01
Thirty minutes	> .10
One hour	< .05
Two hours	< .05
Three hours	< .01

DISCUSSION

There are 3 points which deserve special consideration. First, there is every reason to believe that, if the cortisone-glucose tolerance test is a more delicate barometer of hyperglycemia, then it might also be a sensitive indicator of hypoglycemia. At least, in the light of present information, there is nothing to negate this hypothesis. For this reason, it was thought of interest to study the cortisone-glucose tolerance pattern in

TABLE 1

ORIGINAL DATA OF THE 11 PAIRED EPILEPTIC AND NONEPILEPTIC PATIENTS

Nonepileptic group								*Epileptic group*							
Case No.	*Age*	*Sex*	*Fasting*	*Thirty min.*	*One hour*	*Two hours*	*Three hours*	*Case No.*	*Age*	*Sex*	*Fasting*	*Thirty min.*	*One hour*	*Two hours*	*Three hours*
146	15	F	63	100	85	63	60	092	15	F	45	87	65	55	47
020	16	F	80	140	165	107	68	138	16	F	75	125	153	95	70
008	18	F	80	110	120	117	110	135	18	F	68	118	55	68	45
089	19	M	100	140	140	120	105	131	19	M	60	107	93	45	38
096	22	F	98	127	80	88	70	070	22	F	75	140	120	100	53
099	24	M	65	110	93	62	50	134	24	M	65	118	87	63	35
054	28	F	85	105	150	135	95	139	28	F	80	120	95	53	85
023	29	F	90	174	164	107	50	137	29	F	75	125	135	93	53
056	38	F	98	118	135	85	80	147	38	F	63	107	77	50	38
109	39	M	87	135	107	77	60	141	39	M	85	118	118	120	75
066	50	M	100	125	155	120	95	136	50	M	77	87	87	80	40
mean			86.0	125.8	126.7	98.3	76.6	mean			69.8	113.8	98.6	74.7	52.6
S.D.			13.2	21.1	31.5	24.7	21.7	S.D.			11.2	16.0	29.9	24.5	16.9

patients with and without convulsive seizures. Second, regardless of the standards accepted for the physiologic range for blood glucose, the cortisone-glucose tolerance pattern in the epileptic and nonepileptic patient is significantly different.

All that has been demonstrated here is a statistically significant correlation. True, variable A (blood glucose) is related to variable B (epileptic state). This cannot be interpreted to mean that A causes B. It is just as possible that B causes A. Or, it is likely that both A and B may be the result of a third variable (C).

An attempt is now being made to determine whether a cause-and-effect relationship exists by subjecting patients with convulsive seizures to a diet (low refined carbohydrate, high protein) known to produce a more physiologic carbohydrate metabolic state.[12]

SUMMARY

The general consensus, at the present time through studies of fasting and nonfasting blood sugar and blood glucose, is that there is no relationship between carbohydrate metabolism and epilepsy of the convulsive type.

As far as can be determined, no study of carbohydrate metabolism in the epileptic patient has been done by means of the cortisone-glucose tolerance test.

This study consists of an analysis of the cortisone-glucose tolerance test findings in 22 patients paired with respect to age and sex and including 11 epileptic and 11 nonepileptic individuals.

The findings show significantly lower blood glucose levels at every temporal point except the thirty-minute determinations in the epileptic group.

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MICE THYMECTOMIZED within twenty-four hours after birth remain immunologically immature, able to accept skin homografts regardless of antigenic disparity of sex-linked or H-2 histocompatibility barriers. The mice also fail to grow normally, fail to resist common infections, and die before the fourth month of life. In contrast, thymectomy at 35 days of age results in slight prolongation of skin homograft survival only in a few animals in strain combinations sharing the H-2 locus and has no effect on growth rate. Homologous skin grafts were accepted in most thymectomized neonatal animals in all host-donor combinations studied and rejected in nearly all animals subjected to thymectomy alone or thymectomy and splenectomy at 35 days of age.

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Paralytic Brachial Neuritis

Report of a Case

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A NEURITIS affecting the roots, trunks, divisions, cords, or branches of the brachial plexus has been reported frequently in British medical literature. Only one report, with a review of 23 cases, has appeared in the United States.

In 1941, Wyburn-Mason[1] reviewed 42 cases collected in a period of twenty-one months; in 1948, Parsonage and Turner[2] summarized 136 cases. The 23 American cases were reviewed by Magee and DeJong[3] in 1960.

Magee and DeJong[3] favor "paralytic brachial neuritis" as the diagnostic term for this condition. Spillane[4] published the first detailed description of this syndrome under the title of "localised neuritis of the shoulder girdle." Others have advocated "acute brachial radiculitis"[5,6] or "neuralgic amyotrophy"[2,7] as being more appropriate.

I wish to report a case of this disorder. Awareness of this syndrome should result in its more frequent recognition, proper treatment, and eventual determination of its cause.

CASE REPORT

An 18-year-old, single, white, female bookkeeper was first seen on November 1, 1961. Her chief complaint was that, during the preceding six weeks, the left "shoulder's kind of caving in."

On August 2, a physician had excised a lymph node from the lower part of the left side of her neck. The histologic diagnosis was nonspecific inflammation. In the middle of September 1961, the patient noted a "caving in" of the left supraclavicular area, "soreness" of the left suboccipital area, and a "pulling sensation" in the entire left upper extremity when holding this extremity horizontally. These symptoms had gradually increased during the subsequent six weeks. No muscular weakness had been noted.

The maternal grandmother and a paternal aunt had diabetes mellitus; the remainder of the history was negative.

Physical and neurologic examinations were normal except for (1) a 2-cm. linear scar along the lateral margin of the left trapezius muscle in the lowest one-third of the neck; (2) a hollowing-out of the left supraclavicular area due to atrophy of the scalene and longus colli muscles; (3) mild, but significant, weakness of the muscles of anterior flexion of the cervical spine; (4) atrophy of the left rhomboideus muscles; and (5) winging of the left scapula when abducting the left arm (but not when pushing against a wall).

Hemoglobin; leukocyte count; erythrocyte sedimentation test; urinalysis; serologic test for syphilis; agglutination tests for typhoid, brucellosis, and heterophile antibodies; roentgenograms of the chest and cervical spine; and tuberculin test (intermediate strength of purified protein derivative) were negative or within normal limits. Differential leukocyte count showed 47 per cent polymorphonuclear leukocytes and 53 per cent lymphocytes.

The patient failed to report to the Physiotherapy Department for instruction in progressive resistance exercises, electric stimulation of atrophied muscles, and other forms of treatment. She did return on January 15, 1962, at my request. On that date, no muscular atrophy or weakness was demonstrable, and recovery was complete.

DISCUSSION

The clinical features of paralytic brachial neuritis have been summarized by Parsonage and Turner,[2] Magee and DeJong,[3] Spillane,[4] and Dixon and Dick.[6] These authors had collected series of 16 to 136 cases for analysis.

Paralytic brachial neuritis has been observed in patients between the ages of 8 and 71 years. Both sexes have been affected. Because several

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of the studies concerned military (mostly male) personnel, the sex ratio has been difficult to evaluate.

The first symptom usually was pain of sudden onset and often of considerable severity in the base of the neck and shoulder region. As the pain subsided, muscular weakness was noted. The muscular weakness was followed by atrophy of the paretic muscles. Recovery of muscle strength and size was slow but usually complete.

Generally, the pain was in the region of the muscles that subsequently atrophied. The pain was so intense that muscular weakness often was not recognized until diminution of pain allowed movement of the muscles. The average time between onset of the pain and the awareness of paresis was three to six days.[3]

In the minority of cases, the first symptom was muscular weakness. The location of the paresis and atrophy depended, of course, on the site or sites of the neural lesion. In some cases, single muscles were involved; in others, groups or combinations of muscles were affected. Kiloh and Nevin[8] reported 2 cases of involvement solely of the anterior interosseous nerve, a branch of the median nerve. Richardson[9] added 2 cases of isolated neuritis of the long thoracic nerve. Sensory changes, too, were dependent upon the site of the nerve lesion. Sensory loss usually occurred as the result of involvement of the circumflex or musculocutaneous nerve or the fourth, fifth, or sixth cervical roots. Bilateral, but asymmetric, involvement has been reported by several authors.[2,4,7]

Therapy[5] consisted of analgesics, sometimes morphine, for pain in the acute stages; support to prevent stretching of the paralyzed muscles; and active and passive exercises and electric stimulation of the affected muscles once the painful stage had passed. Most patients recovered completely. However, in general, the more severe and extensive the paralysis, the longer the period of disability. The serratus anterior muscle was the least likely to recover.

Recurrences have been reported.[3] Dixon and Dick[6] considered them to be extremely common. Turner and Parsonage[7] described one instance of 3 attacks within a period of three months and reported recurrences at intervals of twelve and sixteen years.

The cause or causes of this syndrome are not known; however, at this time, it deserves to be considered a clinical entity. Often the onset occurred while the individual was hospitalized for or convalescing from another illness (26 of Spillane's[4] 46 cases). Laboratory data, especially cerebrospinal fluid examinations obtained during the acute phase of this syndrome, are meager.

Paralytic brachial neuritis has been differentiated from anterior poliomyelitis,[2] spinal cord tumor or herniated intervertebral disk in the cervical region,[3] amyotrophic lateral sclerosis,[3] and serum neuritis.[2,3] That this syndrome may represent an atypical form of the Guillain-Barré syndrome must also be considered.

The case reported here fits the description of paralytic brachial neuritis. As stated, some patients have little or no pain, while others have severe and prolonged pain early in the course of this illness. In the present case, the patient noted muscular atrophy approximately six weeks following the excision of a posterior cervical lymph node. The homolateral nerves to the longus colli and scalene muscles and the dorsal scapular nerve were affected. These nerves arise directly from the fifth to eighth cervical roots of the brachial plexus and certainly could not have been traumatized during excision of a superficial cervical lymph node. Complete recovery occurred within a period of nine weeks.

SUMMARY

Paralytic brachial neuritis is an uncommon or unrecognized disorder in the United States. The usual course consists of pain in the base of the neck and shoulders; muscular weakness and atrophy, as determined by the specific nerves affected; and eventual functional recovery.

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Charles W. Schoregge, M.D.

P. W. FREISE, M.D.
Bismarck, North Dakota

THE medical profession lost one of its finest practitioners and the people in the area lost one of their best friends when Dr. C. W. Schoregge of Bismarck, North Dakota, died on November 11, 1961. His widow and 2 sons survive him.

Dr. Schoregge was born on May 21, 1889, at Sleepy Eye, Minnesota. Upon completing high school he went to the University of Michigan where he obtained his M.D. degree. He was then the youngest man to have obtained his degree in the history of the university—a fact which indicated his early and devoted interest in the practice of medicine. After interning at Asbury Hospital, Minneapolis, he went into general practice at Henderson, Minnesota, where he displayed proficiency in both the art and science of medicine.

He married Miss Helen Bosel on September 21, 1916. That same year he associated himself with the Quain and Ramstad Clinic, Bismarck, North Dakota, where his keen diagnostic acumen was quickly recognized. He developed an unusual skill in the postoperative treatment of patients at a time when very few laboratory or diagnostic tests were available but clinical judgment had to be relied upon. He evidenced this faculty daily in the care of his patients. The diagnostic ability with which he was endowed was further enhanced when, in 1925, he went to Vienna for postgraduate training. After returning to the States, he resumed his practice at the Quain and Ramstad Clinic. His bedside manner, his diagnostic skill, and his kindness and everlasting concern for his patients attracted many ailing people to him. He was sought after by members of the medical profession, and if a cliché is permissible, we can truthfully say that he was a doctor's doctor. He could be found in the hospital wards practically any time of day or night looking after the welfare of patients. The hospital personnel recognized his ability and had respect for his judgment. He was not above criticizing the care given a patient, but he always did it in an instructive manner and the nursing staff was not apt to repeat the same error.

Although he had very little time for leisure, reading medical literature was his hobby; however, he was well-read in other fields as well. His keen observation made travel very enjoyable for him until poor health became a handicap. In spite of his heavy practice he maintained an interest in civic and educational affairs and was always among the first to give support for additional educational facilities.

A member of many medical organizations, Dr. Schoregge was active in the American College of Surgeons and was board certified in that specialty. He was also a member of the North Dakota State Board of Medical Examiners for many years. He became a partner in the Quain and Ramstad Clinic in 1934 and in 1939 he assumed the chairmanship of that organization. His heavy

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P. W. FREISE *is senior member of the Department of Obstetrics and Gynecology, Quain and Ramstad Clinic, Bismarck.*

load of patient care was augmented by the executive duties which fell to him in that position. As the organization grew and younger men were added to the staff, he continued to guide and advise and to be truly an inspiration to them. Due to his daily perusal of current medical literature, he was able to supplement his remarkable diagnostic ability with modern medical procedures and therapeutics.

At the age of 65 he retired from the business organization but continued to practice medicine and to guide and advise his younger colleagues and his patients. Dr. Schoregge was respected for his medical judgment and his personality by all who came into contact with him.

Charles W. Schoregge continued to practice medicine to the day of his sudden death. Those of us who knew him well believe that he would have preferred his demise to be just that way.

BOTH STEROIDS and antimalarial agents can be used conservatively to suppress symptoms of systemic lupus erythematosus during pregnancy without harm to mother or fetus. After the symptoms are controlled, steroid maintenance is continued with the smallest possible doses. An appropriate regimen also includes adequate bed rest and, as indicated, salicylates, salt restriction, additional potassium, and antacids. On such treatment, systemic lupus does not increase appreciably the risk of abortion or perinatal mortality. Conversely, pregnancy does not appear to exert any adverse effect upon the course of the disease which cannot be controlled by therapeutic methods. Among 13 patients with acute and 19 with subacute systemic lupus erythematosus, 48 pregnancies in six years terminated in 5 spontaneous abortions, 2 stillbirths, and 41 live births. The course of the disease was not changed during 14 of the 18 pregnancies in the acute group, and remissions occurred in 4 instances. During 30 pregnancies in the subacute group, symptoms did not change in 25 and lessened in 4; an exacerbation in 1 responded to increased steroid therapy. In the entire group, 7 patients had postpartum exacerbations and all but 1 responded to medication.

E. H. DZIUBINSKI, R. K. WINKELMANN, and R. B. WILSON: Systemic lupus erythematosus and pregnancy. Amer. J. Obstet. Gynec. 84:1873-1878, 1962.

EXTENSIVE PULMONARY HEMORRHAGE on hemosiderosis often is associated with focal and diffuse necrotizing glomerulonephritis but is relatively uncommon in other types of nephritis. The lesions apparently are manifestations of the same disorder. The renal disease may be preceded or followed by blood-streaked hemoptysis. At necropsy, pulmonary hemorrhage was found in 39 of 252 patients with glomerulonephritis. In 25, fresh hemorrhage was prominent, and in 14, hemosiderosis was the dominant finding. Focal or necrotizing nephritis was found in 17 cases of hemorrhage and in 5 of hemosiderosis. Subacute and chronic sclerosing nephritis accounted for all but 2 of the remaining cases.

W. T. E. MCCAUGHEY and B. J. THOMAS: Pulmonary hemorrhage and glomerulonephritis: The relation of pulmonary hemorrhage to certain types of glomerular lesions. Am. J. Clin. Path. 38:577-589, 1962.

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Book Reviews . . .

Basic Nutrition

E. W. MC HENRY, PH.D., *and* GEORGE H. BEATON, PH.D., *revised edition, 1963. Philadelphia: J. B. Lippincott Co. 409 pages. Illustrated. $5.75.*

This is a concise, readable volume devoted to modern problems in nutrition. Early chapters include an excellent discussion of methods of nutritional investigation stressing advantages and limitations of various experimental designs in this field with a historical perspective which adds another interesting dimension to the subject. The sections on food constituents, deficiency diseases, and recommended food allowances are well written and highly informative. A balanced and rational approach is accorded such subjects as the low cholesterol diet, the fluoridation of water, and the use of vitamin supplements. A discussion of the changes in nutritive values of foods associated with soil composition, climate, storage, cooking, and preservation points up an often neglected aspect of diet planning. The final sections of the book dealing with nutritional problems are particularly timely in view of modern political concern with overpopulation and underdevelopment in many areas of the world. Illustrations are generally well done and a table of food composition in average servings is included as an appendix.

There are a few criticisms of this work, however; the use of empiric formulas for various vitamins and food constituents conveys little information to the reader. The small section devoted to the physiologic results of salt restriction is misleading due to the authors' failure to distinguish between sodium concentration and total body sodium. These are minor flaws in an otherwise excellent book which can be highly recommended for nursing and undergraduate students and which will serve as a valuable review for the practicing physician.

EDWIN G. OLMSTEAD, M.D.
Grand Forks, North Dakota

Effective Standards for Institutional Care of the Infirm Aged

CHARITABLE RESEARCH FOUNDATION, INC., *Second printing, 1962. Wilmington, Delaware: Charitable Research Foundation, Inc. 271 pages. Illustrated.*

This book, originally prepared in 1959 and recently released in its second printing, should be looked upon as a bible for all administrators of chronic disease hospitals, nursing homes, and homes for the aged. Too, it can serve as an invaluable tool for the continued elevation of standards. Trustees, community leaders, government officials, nonprofit institution administrators, and commercial nursing home leaders can all turn to this book for guidance and interpretation.

The basic study was prepared by a management consultant firm which undertook the field work and developed the various ratios for institutional operations. Its consultants were respected leaders in institutional management. That its concrete material is of value is indisputable. While it was possible to project certain ratios for efficiency of operation and maximum care, the distinctions were clearly drawn among chronic disease hos-

(Continued on page 18A)

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Side Effects: Dryness of mouth, blurred vision, urinary difficulties, and constipation are seldom troublesome and may generally be controlled by reduction of dosage. Other unwanted effects such as skin rashes have been reported rarely.

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Contraindicated: In acute glaucoma, prostatic hypertrophy, and in the presence of urinary bladder neck obstruction or pyloric obstruction or stenosis with significant gastric retention.

Robinul-PH is contraindicated in patients sensitive to phenobarbital or with advanced hepatic or renal disease.

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BOOK REVIEWS

(*Continued from page 16A*)

pitals, nursing homes, and homes for the aged. In actual practice, these lines of distinction frequently become blurred. In the home for the aged and the nursing home whose aims are to rehabilitate wherever possible, commensurate with the individual capacity, a different staff situation prevails. The facility which stresses socialization and maximum movement is also in a different staff situation. The ratio of 2:1 average nursing hours per patient per day may not be an accurate picture, then, when this philosophy is practiced.

Too, to take only what exists, and not what should be, can also lead to inaccurate conclusions. For example, because very few of the facilities described have a social worker, a rehabilitation nurse, a physical therapist, an occupational therapist, or a recreation director, we then find that these lacks are the glaringly weak areas in this book. Inclusion of such staff members represents what some believe is an ideal but what others, who are professionally trained, recognize as being a necessity. Although no ratios are recommended for these duties, the implication is to be found here that they are desirable, with rehabilitation emphasis related primarily to the chronic disease hospital and the very large institution of well over 100 beds. I do not believe we should assume that ways of providing therapy services cannot be found for smaller institutions since patients' need of them is just as acute in the fewer-than-100-bed or 50-bed facility as in the very large institution.

All in all, it is the best book of its type on the market for the selected audience listed above and those who contemplate building or expanding. Although it is not basically a book for the busy private practitioner, medical directors of institutions should consider this book a must.

JEROME KAPLAN
Mansfield, Ohio

Direct Psychoanalytic Psychiatry

JOHN N. ROSEN, M.D., *1962. New York: Grune & Stratton. 253 pages. $7.00.*

This book is 265 pages in length and is written in easily understandable language. In the general introduction Dr. Rosen describes the development of his interest in the use of psychoanalytic thinking in the treatment of psychosis. He takes into account the controversies which have arisen about his method over the years and describes the ways in which his technic has been evaluated by himself and others.

The book is divided into five parts, the first of which deals with the theory of direct psychoanalysis. He describes the Freudian basis for his direct psychoanalytic theories; this is followed by a section in which each of the phases of psychosexual development are discussed, succinctly and in easily understandable language, as they apply to direct psychoanalytic theory. The next section deals with abnormalities of development as related to deficiencies of "mothering" and from this he moves to a description of his views of what a psychosis is and describes the phases of psychosis.

(*Continued on page 21A*)

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(Continued from page 18A)

The second part of the book deals with his therapeutic method and procedures during the course of treatment. He describes the special environment in which the patients are treated and the behavior of the therapist as well as that of his assistants. While this environment is a special one that few of us would have at our disposal, it is interesting to know how he goes about applying the technic of direct psychoanalysis, and this description may suggest some modifications which would be applicable in other settings.

About 100 pages are then devoted to description of the manifestation of understanding and treatment of psychosis in which the various observable manifestations are described and compared with traditional classifications of mental illness, and then the direct analytic interpretation is offered. This is an interesting section which broadens the understanding of regressive phenomena and thinking.

The next part of the book deals with the understanding and treatment of the postpsychotic, or as Dr. Rosen calls it, the "neo-neurotic" phase of recovery from the psychotic disorder. Throughout the text he emphasizes the role of the direct psychoanalyst in being a "foster parent" to the regressed individual and his role in helping the individual "grow up" again in a more adaptive way. The last section deals with Rosen's views of the present status of psychiatry.

While this book does not settle the controversy about etiology or treatment of psychosis, it does offer some useful concepts and frameworks about which to think. It is a concise statement of the author's tremendous amount of thought and effort in dealing with a difficult problem. It is well worth reading for anyone interested in the dynamics of psychosis.

TITUS P. BELLVILLE, M.D.
Minneapolis

Glucagon: Chemistry and Function in Health and Disease

PIERO P. FOA, M.D., *and* GIORGIO GALANSINO, M.D., *1962. Springfield, Illinois: Charles C Thomas. 126 pages. Illustrated. $6.75.*

This is a well-organized monograph on a timely subject and it represents an excellent reference source for clinical investigator, physiologist, biochemist, and clinician alike. That which cannot be found in the text may almost certainly be obtained by consulting 37 pages of bibliography containing 724 publications about this thoroughly investigated drug. The history of glucagon, including its extraction, purification, biochemical behavior, and assay technics, is a fascinating achievement and is very clearly presented by these authors.

The modus operandi of glucagon secretion and regulation, together with its metabolic fate, is described in considerable detail. The highly complex mode of action of this hormone is elaborated upon at the sophisticated level

(Continued on page 22A)

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(Continued from page 21A)

of the research biochemist. Actually there are perhaps only 36 pages of practical value to the busy practitioner which encompass "The physiological effects of glucagon," "The physiological role and hormonal nature of glucagon," and "The clinical significance of glucagon." However, these 36 pages are well worth the price of the entire monograph. One valid criticism resides in the all-too-brief discussion of glucagon therapy for insulin hypoglycemia in diabetic patients. The latter represents a remarkable therapeutic breakthrough for the "reaction-prone" or "brittle" diabetic. In particular, parents of diabetic children now enjoy hitherto unrealized peace of mind with a vial of glucagon in the refrigerator. In this reviewer's experience, premixed glucagon, if refrigerated, will remain stable for at least one year.

E. A. HAUNZ, M.D.
Grand Forks, North Dakota

Emergencies: Casualty Organization and Treatment

T. SCHRIRE, *editor, 1962. Springfield, Ill.: Charles C Thomas. 366 pages. Illustrated. $15.50.*

This volume of 366 pages is not a manual of military surgery nor is it a treatise on medical civil defense. It is a comprehensive and well-organized textbook dealing with the management of medical and surgical emergencies. The senior author or compiler is head of the Casualty Department, Groote Schuur Hospital, in Cape Town, South Africa. The Casualty Department as described corresponds to the emergency room or admitting service of the average large American city hospital, and a "casualty attendant" as defined under the National Health Service Act of England is "a patient who comes to the hospital unannounced and is seen and treated otherwise than at a consultative sesion."

The Casualty Officer heads up the emergency service and the book points up the desirable qualifications of such a physician. It would appear that specialization in casualty care is more accepted in England, under the National Health Service, than in America.

Adequate space is given to discussions of organization, physical layout, staffing, and supply of the ideal casualty service as a key part of the entire hospital as well as a vital service and resource to the community at large.

There is a systematic review of the common emergencies that bring people to the hospital—traumatic injury to any part of the body; medical emergencies, due to infections and systemic disease; psychiatric crises; alcoholism; acute poisonings; snake bite; and others. The American reader is struck by the attention and organization required in South Africa for the emergency management of dehydration and diarrhea in children and infants.

This handsome and well-written little book should be in the admitting room of every hospital. The treatment advocated is noncontroversial, resting, in the words of the author, "upon basic truths which are usually recognized by most responsible therapists, the stress being laid on the organization rather than on the form of treatment."

KARL R. LUNDEBERG, M.D.
Minneapolis

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News Briefs . . .

North Dakota

DR. ROBERT J. ULMER of Fargo has been elected a fellow of the American College of Physicians. Dr. Ulmer is a graduate of the University of Texas Medical Branch, Galveston.

* * * *

DRS. RONALD BROWN and STANLEY BOYER will join the Bottineau Clinic this summer. Dr. Brown is a native of Scranton, North Dakota, and Dr. Boyer is from Elkhart, Indiana. Both are completing internship at Charles T. Miller Hospital in St. Paul, Minnesota. Dr. William F. McCullough will leave the clinic in July to begin graduate work.

Minnesota

DR. H. P. BARTHOLDT, a native of Germany, has begun practice in Soudan. Dr. Bartholdt was previously senior physician for the state of New Jersey. After attending medical schools in Switzerland and Germany, Dr. Bartholdt interned in St. Louis. He also studied surgery and orthopedics at the Quain and Ramstad Clinic in Bismarck, North Dakota, for two years.

* * * *

DR. REX B. JOHNSON has become associated in practice with Dr. Joseph W. Burnett, New Ulm radiologist. Drs. Johnson and Burnett serve hospitals in Sleepy Eye, St. Peter, Springfield, Trimont, St. James, Gaylord, Arlington, and Mountain Lake in addition to being staff radiologists of Loretto Hospital and Union Hospital in New Ulm.

* * * *

THIRTEEN MINNESOTA PHYSICIANS have been elected fellows of the American College of Physicians. They are Drs. James B. Carey, Jr., Minneapolis; Robert B. Howard and Harold G. Muchmore, St. Paul; John B. O'Leary, Brainerd; and Philip J. Osmundson, George D. Molnar, R. Drew Miller, John G. Mayne, Gordon M. Martin, Joseph M. Kiely, James C. Hunt, Kenneth G. Berge, and Lloyd G. Bartholomew, all of Rochester.

* * * *

DR. ORVILLE A. HABLE will begin practice at the Buffalo Lake Clinic on July 1 after completing his internship at St. Mary's Hospital in Minneapolis. Dr. Hable is a native of Hector.

* * * *

DR. WESLEY W. SPINK, professor of medicine at the University of Minnesota Medical School and an authority on infectious diseases, is the new president of the American College of Physicians. Dr. Spink succeeded Dr. Franklin M. Hanger, professor emeritus of the Columbia University College of Physicians and Surgeons. A native of Duluth, Dr. Spink received his medical degree from Harvard Medical School, Boston. He joined the staff of the University of Minnesota Medical School in 1937 and became a full professor in 1947.

* * * *

DR. JAMES NAKAMURA has joined the staff of the Korda Clinic in Pelican Rapids. Dr. Nakamura has been prac-

(Continued on page 24A)

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NEWS BRIEFS

(Continued from page 23A)

ticing in Deer River for the past twelve years. He is a graduate of Loma Linda University School of Medicine, Loma Linda, California.

South Dakota

DR. EARL NELSON has begun practice at the Lake Andes Medical Center. A native of Viborg, Dr. Nelson received his medical degree from Northwestern University Medical School, Chicago. He practiced previously in Cass City, Michigan.

Deaths . . .

DR. WILLIAM G. GUTHRIE, 78, Hennepin County Coroner since 1955, died March 22 in Minneapolis. Dr. Guthrie, a retired colonel, served for thirty-two years in the army medical corps. He retired in 1946 as medical director of the Fort Snelling Station Hospital. He was a member of the American College of Surgeons and the Association of Military Surgeons. Dr. Guthrie was graduated in 1910 from the University of Vermont College of Medicine, Burlington.

° ° ° °

DR. JOHN H. MOORE, 68, Grand Forks physician and surgeon, died April 7 in Liberal, Kansas, after suffering a heart attack while enroute home from a vacation. Dr. Moore, a native of Pembina, North Dakota, was a former president of Grand Forks Clinic and former chief of staff of St. Michael's Hospital and Deaconess Hospital in Grand Forks. He had also served as president of the North Dakota Public Health Advisory Council, North Dakota Society of Obstetrics and Gynecology, and the Central Association of Obstetricians and Gynecologists. Dr. Moore was a graduate of Northwestern University Medical School, Chicago.

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DR. DANIEL W. WHEELER, 68, retired Duluth physician, died April 8. Dr. Wheeler was a former chief of staff of St. Mary's, St. Luke's, and Miller Memorial hospitals in Duluth. He had been president of the Minnesota Society of Internal Medicine, the Minnesota Society for Study of Heart and Blood Vessel Diseases, and the St. Louis County Medical Society. Dr. Wheeler served in the Navy medical corps in World War II and was cited for bravery in removing wounded men from burning tent wards during Japanese bombing attacks on Okinawa. A native of Iowa, Dr. Wheeler received his medical degree from Rush Medical College, Chicago.

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DR. HARRY E. BOWERS, 74, physician in Lake City, Minnesota, since 1919, died March 29 in Rochester, Minnesota. Dr. Bowers was a graduate of the University of Illinois College of Medicine, Chicago.

° ° ° °

DR. JULIAN F. DUBOIS, 75, of Sauk Centre, Minnesota, died there on March 31. Dr. Dubois was the first Minnesotan to serve on the National Board of Medical Examiners, being appointed in 1950. He was appointed to the Minnesota State Board of Medical Examiners in 1927 and became secretary in 1937. Dr. Dubois was a graduate of Rush Medical College, Chicago.

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Although no cure for psoriasis exists, many beneficial therapeutic agents are available, according to Howard S. Gray, Bismarck, North Dakota. The proper use of the available agents will usually result in benefit to the patient, he states.

Dr. Gray's paper on the **Treatment of Psoriasis** is the first in a series from the Quain and Ramstad Clinic, Bismarck, prepared especially for THE JOURNAL-LANCET by Drs. H. Milton Berg and Lloyd S. Ralston of the clinic.

Since psoriasis is a relatively common skin disease, the treatment of the patient with psoriasis is a problem frequently encountered not only by dermatologists but also by physicians in the general practice of medicine. It is the opinion of Dr. Gray that most physicians would agree that treating this disease can be a perplexing problem.

During recent years some new methods for treating psoriasis have become available. These new forms of psoriatic therapy, together with some of the older treatment methods, which are discussed and considered, include intralesional injection, topical corticosteroid therapy, topical therapy, ultraviolet light therapy, irradiation therapy, systemic corticosteroid therapy, and antimetabolite therapy.

Continuing the series on Urology for the Practitioner will be the paper by Dr. Maurice J. Gonder of Buffalo, N. Y., on **Prostatitis.**

Reaction to Bromsulphalein in two cases is presented by Dr. Leo van der Reis of San Francisco.

The Journal-Lancet

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Series on UROLOGY *for the* PRACTITIONER

Urologic Diseases in Children

C. M. PASQUIER, JR., M.D., J. H. CAMPBELL, M.D.,
E. C. ST. MARTIN, M.D., and W. L. GEISSLER, M.D.
Shreveport, Louisiana

During the past two decades the pediatric aspect of urology has gained rapidly in prominence. Viewed earlier as a curiosity, it has now reached a level of development which would almost justify the status of a specialty within itself. Although several factors have contributed to this transition, probably the most important has been the development of precision endoscopic instruments in the small sizes necessary for examining the urinary tract in children. At the present time, instruments are available which permit accurate study in even the newborn infant. Supplementing this we have witnessed great advances in anesthesiology, permitting the safe administration of anesthetic agents so often required in the investigation and treatment of these small patients. Improved radiologic technics and contrast media, along with the tremendous armamentarium of chemotherapeutic and antibiotic agents, have contributed significantly to the advances which have been made in the study and treatment of urologic diseases in children.

As a result of this facility with which we can now examine the urinary tract in children, we have learned that urologic diseases in this age group are by no means uncommon. In fact, anomalies and infections of the urinary tract emerge as two of the more prevalent diseases of childhood. According to Campbell,[1] genitourinary malformations occur in more than 10 per cent of all human beings at birth and are commoner in this system than elsewhere in the body. The urinary tract is the second most frequent site for the localization of infection in the young, the commonest being, of course, the respiratory system.

All who are called upon to treat children, particularly the pediatrician and the general practitioner, must be alert to the possibilities of urinary tract disease at all times. The striking fact in this connection is that symptomatology may be misleading and may belie the true nature of the situation. Major degrees of urinary tract pathology, accompanied by relatively minor complaints, are sometimes encountered. Moreover, the urinary tract might not even fall under suspicion unless one is aware of the more subtle manner in which these conditions at times manifest themselves. Urinary symptoms may be entirely absent. The clinical picture may be that of a so-called "fever of undetermined origin" or may even simulate a problem of malnutrition or retarded growth.

What then, should prompt one to advise uro-

The authors are from Department of Urology, Schumpert Memorial Sanitarium, Shreveport.

logic investigation in the child? Obviously any symptoms pointing directly to the urinary tract would be an indication for study. Such symptoms include frequency, dysuria, urgency, incontinence, tenesmus, or hematuria. Moreover, along these lines, experience has demonstrated that failure to develop satisfactory toilet training by age 2½ to 3 years, bedwetting persisting until school age, or reversion to a more infantile type of bladder function in a child previously well trained, are all further indications for urologic investigation.

While few would fail to recognize the necessity for study in the presence of these symptoms, the importance of completely investigating all urinary infections and genitourinary anomalies is equally great yet probably not so widely realized. In regard to infections, the tendency in the past has been to reserve complete urologic study only for the recurrent cases. However, more recent experience has demonstrated the value of careful study of all infections from the outset. Some degree of urinary obstruction is associated in most of these patients. Unless this fact is recognized early and corrected by proper surgical measures, all attempts at medical therapy will be futile and unnecessary damage to the urinary tract will be permitted to progress. The importance of investigating all evident genitourinary anomalies is attested by the fact that fully one-third of such patients have some other urinary anomaly associated, often of a more damaging nature than the one immediately evident.

The presence of an abdominal mass is a further indication for urologic study. Hydronephrosis is the commonest condition producing a palpable abdominal mass in children, with neuroblastoma of the adrenal and Wilms's tumor of the kidney following in that order.

Another symptom demanding investigation is the presence of persistent vaginal discharge in the female child. In such a patient, one may at times discover complete renal and ureteral duplication with ectopic termination of one of the ureters in either the distal urethra or vagina.

Finally, of course, all children with hypertension should have the benefit of urologic study. Renal aortography should be included if the other usual urologic diagnostic procedures fail to reveal the cause of the blood pressure elevation. Renal vascular abnormalities producing hypertension occur in children as well as in adults.

DIAGNOSTIC PROCEDURES

Given one or more of the above indications, urologic diagnostic study should be conducted. By and large, adequate investigation includes at least pyelograms, cystoscopy, cystograms, and bacteriologic study of the urine.

In the past there has been a rather widespread practice to rely solely on the information derived from an intravenous pyelogram and to assume that the urinary tract was normal because the pyelogram demonstrated no abnormality. This is erroneous. With the recent, more widespread employment of cystography in children, an apparently normal upper urinary tract may be observed on an excretory urogram yet, in the same patient, quite a different appearance may be demonstrated as a result of vesicoureteral reflux occurring on cystographic study.[2]

For this reason, most urologists now believe that the cystogram is an integral part of adequate investigation of the urinary tract in children and occupies a position of importance equal to that of cystoscopy and pyelography.

Bacteriologic study of the urine should be employed whenever one is attempting to demonstrate the presence or absence of infection. This, of course, should always be included in every urologic work-up. Another widespread tendency, which should be abandoned, is that of deciding whether a patient has infection solely on the basis of the presence or absence of pus cells in an improperly collected urine specimen. Female children, particularly, are often erroneously labeled as having a urinary infection because a few pus cells have been found in a routine voided specimen. In females, catheterization is the preferred manner of obtaining specimens although many recommend the "clean-catch" method of collecting samples. This is done by first carefully cleansing the child's external genitalia with antiseptic solution and then catching the midstream portion during voiding in a sterile container. In males, the latter method is entirely satisfactory and generally is preferable to catheterization. After the urine sample has been properly collected, it should be subjected to bacteriologic study. The present opinion is that the presence or absence of pus cells on microscopic examination of the urinary sediment does not prove or eliminate infection. The most reliable method of making this determination is the urine culture with colony count.[3] A count of 100,000 or more colonies per cubic centimeter of urine is considered definite proof of the presence of infection; one of less than 100,000 but more than 1,000 colonies per cubic centimeter is suspicious and should be repeated. Less than 1,000 per cc. probably represents contamination and is of no significance. When facilities for such studies are not available, microscopic examination of a stained smear of the uncentrifuged sediment has proved to be a valuable alternate procedure. When organisms can be observed on such examination, the chances are at least 98 per cent that the colony count would be 100,000 per cc. and this may be considered definite evidence of infection.

The inclusion of renal aortography as a portion of urologic investigation in children should not be overlooked, particularly if hypertension enters the clinical picture. In children, as in adults, recent experiences have shown that one cannot rule out renal disease as a cause for elevated pressure solely on the basis of an apparently normal pyelogram.

MORE COMMON CONDITIONS ENCOUNTERED

The conditions most often demonstrated in children following urologic study are: congenital anomalies, infection, calculus disease, and neoplasms.

Anomalies probably constitute the most important disease of the urinary tract encountered in children. Almost without exception, some degree of urinary obstruction accompanies most of the congenital malformations and, for this reason, one should discover them as early as possible. Application of appropriate corrective measures at an early age will prevent irreparable loss of renal function.

Infection and obstruction tend to go "hand in hand" and whenever one is encountered the other should be suspected. Consequently, infection often occurs in conjunction with these anomalies. Since infection is more likely to be recognized first, one should always suspect the possibility of an obstructive anomaly in all cases of urinary infection and should perform the necessary diagnostic studies to prove the presence or absence of such an anomaly.

Calculus disease, although uncommon, is certainly not unheard of in children. Since calculi tend to result in varying degrees of urinary obstruction, infection is a frequent accompaniment. Therefore, in the presence of infection, the possibility of stone should be suspected. Although one might be inclined to expect so-called "metabolic stones," such as the cystine stone accompanying cystinuria and the uric acid stone of hyperuricemia, to be commoner in children than the usual types of calcium-containing stones, this has not been the experience of the authors. We have noted in our practice that most of the children with calculous disease have had one of the usual varieties such as calcium oxalate or phosphate.

Of the neoplasms which can occur in the urinary tract of children, the commonest ones are Wilms's tumor and adrenal neuroblastoma. While more properly the latter is not actually a urinary tract lesion, it is customarily considered as such because of its intimate association with the kidney. An abdominal mass is the finding which usually prompts urologic study of these patients. Often, differentiation between the two is possible only at the time of surgical exploration.

TREATMENT

Many of the congenital anomalies, particularly those of an obstructive nature, require definitive major surgical procedures, the details of which are beyond the scope of the present discussion. However, the commonest congenital obstruction of the urinary tract, namely, stenosis of the external meatus, can be recognized and corrected by any physician called upon to treat children. It is surprising how troublesome this basically simple lesion can become unless meatotomy is performed. A word of caution should be inserted here to emphasize that this is a congenital lesion and that other anomalies may be associated. If complete urologic work-up is not done at the outset in such patients, it should be insisted upon later if any further evidence of urologic disease develops.

Infection is probably the commonest urologic condition encountered and treated by pediatricians and general practitioners. However, as pointed out earlier, a congenital obstructive anomaly is often associated. Recognition and correction of this, usually by surgery, are mandatory before one embarks upon any long-range program of antibiotic or chemotherapeutic administration. However, after obstruction has been eliminated, it is important to treat urinary infections continuously for several months and sometimes longer. Whenever possible, selection of the agent to be used should be based upon information from bacteriologic sensitivity studies. Therapy should not be discontinued until one has evidence of a sterile urine, preferably by cultural studies. Frequent follow-up examination to insure that the urine remains free of infection is essential.

Most of the calculi observed by the authors in children have required surgical removal. Attempts to determine a basic cause for the stone should include studies for hyperparathyroidism and hyperuricemia. Analysis of the calculus after removal is important. Recurrences of those composed of uric acid and cystine can be prevented by the simple measure of maintaining an alkaline urine. The chance of re-formation of calcium-containing stones can often be minimized by dietary measures such as the elimination of dairy products and the increased intake of fluids.

Neoplasms of the urinary tract demand adequate surgical excision whenever technically possible. The two commoner malignancies previously mentioned, Wilms's tumor and neuroblastoma, are both radiosensitive. The excellent modalities now available for application of external irradiation are a valuable adjunct in the treatment of these two diseases and have tremendously improved the cure rate possible from surgery alone. More recently, the use of actinomycin D as an added measure against Wilms's tumor has been encouraging. It appears that it may be effective even in patients with metastasis.

SUMMARY

Improved facilities for examination of the urinary tract in children during the past two decades have resulted in an increasing awareness of the frequency of urologic diseases in this age group.

Unless this fact is kept in mind by all physicians who are called upon to treat children, many of these disorders will be overlooked. Symptomatology may not even point directly to the urinary tract.

Indications for urologic study are enumerated and the importance of various diagnostic procedures described.

The more frequent urologic diseases of childhood and their treatment are discussed.

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CONGENITAL HEMIHYPERTROPHY is differentiated from similar entities by a number of orofacial changes which end abruptly at midline. The sharp midline demarcation is not seen in progressive hemifacial atrophy, monostotic fibrous dysplasia, congenital lymphedema, arteriovenous aneurysm, Klippel-Treanaunay syndrome, or von Recklinghausen's neurofibromatosis. The tongue is often enlarged and thickened, with grossly hypertrophic fungiform papillae. Lips, uvula, maxilla, mandible, and palate may be enlarged and the alveolar process thickened to twice the normal width. When deciduous teeth are enlarged, changes are generally restricted to the second molars. Eruption and loss of deciduous teeth is sometimes several months earlier on the involved side. Permanent teeth may erupt early, with striking enlargement of cuspids, bicuspids, and the first molars. Incisors and second and third molars are spared, suggesting that the condition is not a form of abnormal twinning as has been set forth by some investigators. Apart from orofacial changes, enlargement with congenital hemihypertrophy may range from a single digit to an entire half of the body. One or more systems may be hypertrophied, and the condition may be segmented, unilateral, or crossed. The asymmetry is almost always evident at birth but may be accentuated at puberty. Associated mental retardation is not uncommon. Data are based on examination of a 15-year-old girl with complete congenital hemihypertrophy. Oral examination showed left-sided hypertrophy of the gingiva, buccal mucosa, maxilla, mandible, and tongue.

ROBERT J. GORLIN and LAWRENCE H. MESKIN: Congenital hemihypertrophy. J. Pediat. 61:870-879, 1962.

Early Pericardiectomy in the Management of Active Tuberculous Pericarditis

JAMES D. SPRINKLE, M.D., JESSE P. CHAPMAN, JR., M.D.,
and ROBERT P. CROUCH, M.D.

Winston-Salem, North Carolina

THE ACCEPTED treatment of active tuberculosis of the pericardium before antibiotics were available was primarily expectant, with strict bed rest and general supportive measures. Associated with this therapeutic regimen was a mortality rate of 83 per cent in 37 proved cases with and without effusion, as reported by Harvey and Whitehill[1] in 1937. Progress began with the advent of streptomycin, and Holman,[2] in 1951, reported 4 cases of active tuberculous pericarditis treated by pericardiectomy "with resulting cure in three and marked and still progressive improvement in the fourth." Subsequently, Shumacker and Harris[3] recognized that chronic idiopathic pericarditis with effusion and tamponade might progress to chronic constrictive pericarditis and in 1956 reported excellent results with pericardiectomy in 2 such patients. These same authors pointed out that patients with tuberculous pericarditis and effusion should have early definitive pericardiectomy. Blakemore and associates[4] reported in 1960 that pericardiectomy produced excellent results in 8 patients with relapsing pericarditis and stated that "the pericardium in patients with tuberculous or idiopathic pericarditis and pericardial effusion should be removed without waiting for the development of constrictive pericarditis." Thus, pericardiectomy is gaining wider acceptance in the earlier treatment of both tuberculous and nonspecific pericardial diseases. This seems reasonable since the patient is subjected to surgery before development of the seriously deranged physiology of cardiac constriction and myocardial fibrosis and at a time of relative technical simplicity.

CASE REPORT

In order to propound further the idea of early pericardiectomy, a case of active tuberculous pericarditis is presented.

A 41-year-old male Negro was admitted to the Western North Carolina Sanatorium for the first time October 28, 1961, as a transfer from another hospital to which he had been admitted September 11. He had a one-week history of marked exertional dyspnea, weakness, fever, and pain in the right upper quadrant. The significant physical findings were: blood pressure, 90/60; pulse, 120; tachypnea; marked distention of jugular veins; increased area of cardiac dullness; absence of cardiac impulse; and tenderness in the right upper quadrant. The absence of ascites and peripheral edema was not mentioned in the transfer note. The purified protein derivative No. 2 was 4 plus in forty-eight hours. On pericardiocentesis, September 11, 150 cc. of clear fluid were aspirated and on September 13, 360 cc. of clear fluid were removed. On October 3, pericardial biopsy was performed through a left parasternal incision and 1,800 cc. fluid were removed from the pericardial sac. Pathology report on biopsy specimen was "chronic granulomatous inflammation involving fibrofatty tissue, consistent with and suggestive of tuberculosis." Special stains for acid-fast bacilli were positive. His drug therapy before transfer consisted of streptomycin and isoniazid (INH).

On admission to the Western North Carolina Sanatorium he was markedly improved symptomatically; however, distended jugular veins, extensive cardiac dullness, diminished cardiac sounds, absent breath sounds at left base, and pericardial friction rub were noted. The liver was not palpable and no peripheral edema was seen. Laboratory studies included hemoglobin, 11.2 gm. per cent with normal differential; corrected sedimentation rate, 34 mm. per hour; serologic test for syphilis, nonreactive; and urinalysis, fasting blood sugar, and blood urea nitrogen all within normal limits. The admission electrocardiogram was consistent with pericarditis as evidenced by inversion of T waves and low-voltage QRS complexes in the unipolar precordial chest leads. On October 30, 250 cc. of bloody fluid were aspirated from the pericardial sac and reported positive for acid-fast bacilli December 4. The organisms were sensitive to isoniazid and streptomycin.

On admission, he was given streptomycin, 1 gm.; isoniazid, 300 mg.; and para-amino salicylic acid (PAS),

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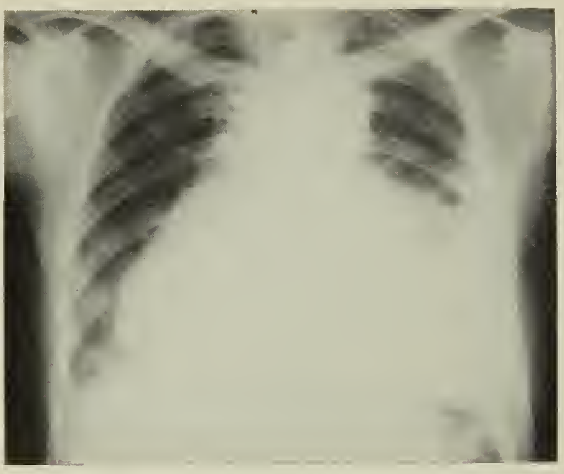

Fig. 1. Admission roentgenogram with enlarged cardiac silhouette and pericardial effusion

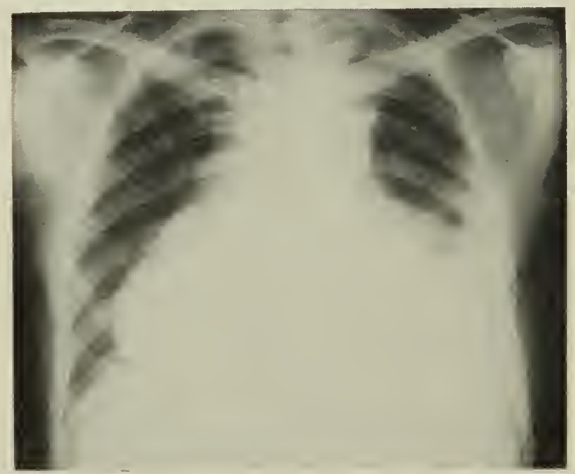

Fig. 2. Roentgenogram one week later without change

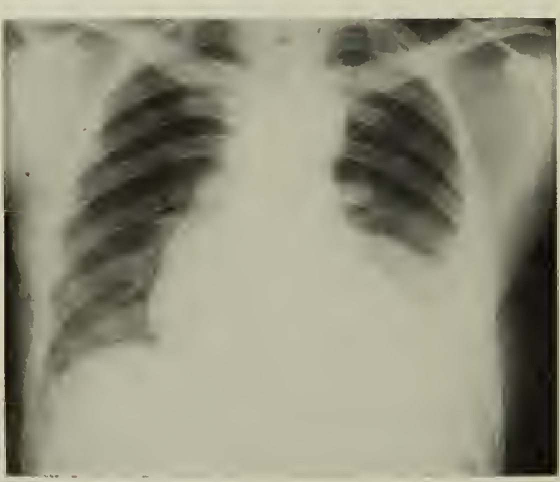

Fig. 3. Roentgenogram six weeks later with marked diminution in cardiac silhouette

12 gm. daily. Six weeks of this drug therapy was elected in preparation for surgery. Digitalization with digitoxin was accomplished one week before surgery. On December 14, the venous pressure in the left antecubital fossa was 330 mm. of saline.

One day later, pericardiectomy was performed through a sternal-splitting incision. The pericardium had already undergone fibrous contracture, and myocardial activity was significantly dampened. The pericardial space was obliterated and dissection more tedious than had been expected. It was clear that even earlier operation should have been performed. The pericardium was removed from the ventricular myocardium laterally to the phrenic nerves, inferiorly over the apex, and superiorly to include the roots of the great vessels. The entire right atrium and caval insertions were liberated. The site of previous pericardial biopsy was intimately adherent to the chest wall. The operative procedure was uneventful except for rare premature ventricular contractions and a small rent in the right ventricle which required suturing. The pathologist returned a diagnosis of "chronic granulomatous pericarditis."

The postoperative course was entirely without complication. The anterior mediastinal drainage catheter was removed at forty-eight hours, and full ambulation was attained on the third postoperative day. Venous pressure was 160 mm. saline in the upper extremities on both the fourth and twelfth postoperative days and 150 mm. of saline on the sixty-ninth postoperative day.

DISCUSSION

This case illustrates successful pericardiectomy for active tuberculous pericarditis. It is important to note that, on the roentgenogram of October 30 (figure 1), a markedly enlarged cardiac silhouette is seen and pericardial effusion is still present after six weeks of antituberculosis drug therapy and pericardial biopsy at another hospital. Also to be noted is the presence of a left pleural effusion. The second roentgenogram, seven days later (figure 2), shows no essential change; however, the third preoperative x-ray, six weeks after admission (figure 3), shows rather marked diminution in the cardiac silhouette. In the six weeks before operation, the effusion absorbed, a significant degree of pericardial constriction ensued, and pericardiectomy was rendered more difficult.

In order to select the optimum time of surgical intervention one must be aware of the extreme rapidity with which these effusions may resorb and the transition to fibrous contracture may occur. In reviewing Holman's[2] paper, it is seen that in cases 1 and 2, only nineteen and seventeen days, respectively, were required for considerable diminution in cardiac silhouette.

With the vagaries of this disease in mind, the following plan of treatment is outlined and may be considered in 3 phases:

Preoperative. Any acutely ill patient who presents with fever; chills; lassitude; tachypnea; distended jugular veins; prominent cardiac silhouette on roentgenogram; and, especially in the presence of elevated venous pressure, peripheral edema and a strongly positive tuberculin reaction is presumed to have acute tuberculous pericarditis. Pericardiocentesis is performed and fluid is obtained for acid-fast bacilli, fungi, and pyogens and repeated as necessary for tamponade. Bed rest is ordered and the patient is given a high protein diet and vitamins. Transfusion is necessary if hemoglobin is 11 gm. per cent or less. Combined antituberculosis drug therapy is started immediately after obtaining pericardial fluid. This full regimen is indicated for four to six weeks, and prophylactic digitalization is carried out. If the effusion is being absorbed rapidly, four weeks of preparation is indicated, and pericardiectomy is performed regardless of the fact that inadequate time may have elapsed for results of culture for the acid-fast bacillus.

Operative. Excellent exposure is obtained with a sternal-splitting incision. Early intervention facilitates safe extensive decortication. This should be carried to the phrenic nerves laterally, and the right atrium with its caval insertions, roots of great vessels, and apex of heart must all be liberated. If significant constriction is present, the left ventricle should be liberated initially to prevent possible pulmonary congestion. Dissection must be abandoned temporarily if any cardiac arrhythmia develops. Obviously, coronary integrity is mandatory, and decortication of the atrioventricular groove and the area of the descending branch of the left coronary artery must be meticulous. A defibrillator and an electrocardiographic monitor are essential. Adequate whole blood must be readily available. An anterior mediastinal suction catheter is left in situ. In the event of a pleural rent, temporary pleural drainage is indicated.

Postoperative. Early postoperative management is that of any major thoracic procedure. Combined antituberculosis drug therapy is reinstituted in full therapeutic doses. The mediastinal catheter is removed in forty-eight to seventy-two hours and ambulation then begun and continued for ten days to two weeks. At this point, then, it is important to remember that one is dealing with tuberculous involvement of a serosal surface and long-term bed rest and antituberculosis drug therapy are indicated just as in tuberculous pleuritis. Figure 4 is a roentgenogram, made two months following surgery, in which further resolution is seen.

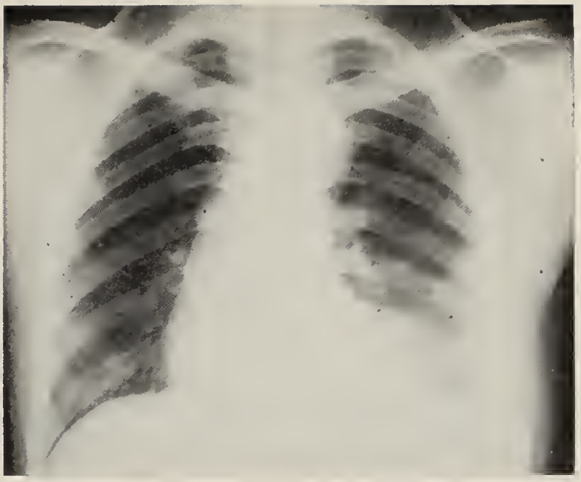

Fig. 4. Roentgenogram two months postoperatively with further resolution

SUMMARY

A case of active tuberculous pericarditis is presented in which pericardiectomy was performed two and one-half months after positive diagnosis and three months after onset of symptoms. Although early surgery was intended, operative intervention was late, as evidenced by difficulty in dissection and a ventricular rent. The optimum time for pericardiectomy is in the stage of effusion and after four to six weeks of combined antituberculosis drug therapy. The rapidity with which tuberculous pericardial effusions may resorb and fibrous contracture ensue must be recognized and surgery timed accordingly. With adequate drug therapy, surgery may be undertaken safely and extensive pericardial excision performed with maximal technical facility.

The authors are indebted to Dr. Howard H. Bradshaw for his suggestions after review of this paper.

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The Stomach Since the Hunters

Gastric Temperature and Peptic Ulcer: Gastric Cooling and Freezing

OWEN H. WANGENSTEEN, M.D.

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JOHN HUNTER'S numerous contributions in the field of gastric temperature and peptic ulcer are well known and perhaps rival in importance any of his many significant contributions to surgery. His interest and curiosity concerning digestion in poikilotherms are well known. It was when John Hunter was at Belle Isle, now just two hundred years ago, that he made his first observations on retarded digestion in the cold lizard and frog, observations which he later undertook to subject to experiments, amongst his first at Earl's Court in 1766.

I. THEORIES OF GASTRIC DIGESTION

Much effort expended upon the stomach by a number of scientists and clinical investigators, since the Hunters, has failed to resolve all its mysteries. How the parietal cell, bathed in a fluid medium with a pH of 7.1, can secrete a fluid approximately more than a million times more acid is still a bewildering and baffling enigma.

Hippocrates (c. 400 B.C.) conceived of digestion in the stomach as the consequence of heat generated within the stomach. In fact, coction and cooking were essentially interchangeable terms. Galen (c. A.D. 175), more than five centuries later, thought of digestion within the stomach as a series of coctions, which he termed elixation. Fifteen centuries later, in 1641, LeBoe (Sylvius) introduced the concept of fermentation within the stomach. In 1648, a contemporary, van Helmont, considered digestion within the stomach to be a series of fermentations. A generation later, in 1680-81, Borelli, who carried out observations on birds possessed of a gizzard, portrayed digestion within the stomach as a grinding triturative process.

Borelli believed that, in stomachs of dolphins, a corrosive juice originating within the stomach was responsible for digestion. In 1701, Pitcairn, an English observer, estimated that the triturative force of the stomach could be as high as 12,951 lb.! Fifty years later, the view that trituration had little if any place in gastric digestion was permanently put aside by the simple experiment performed by Réaumur, to which important observation we shall return presently. In 1707, Stahl conceived of gastric digestion as a putrefactive process which he regarded as a variant of fermentation; Boerhaave, a contemporary (1708), looked upon digestion as a sequence of solutions. The first observer to abjure the idea of trituration after the introduction of the idea by Borelli was Helvetius who, in 1719, believed gastric digestion within the stomach was owing to the solvent action of the gastric juice. Haller, probably the greatest of all medical encyclopedists, though familiar with the experiments of Réaumur (1752), had an abiding faith in his own tedious compilations and, greatly influenced by the preponderance of agreement from ancient times to his own day, concluded, in 1764, that gastric digestion was a complex action constituted by trituration, fermentation, and putrefaction. In 1795, Blumenbach went along with the thesis earlier proposed by Helvetius that the gastric juice was the chief agent in the "great business of digestion." Soemmering, a year later, concluded with Borelli, Pitcairn, and Hippocrates that gastric digestion was a triturative process aided by heat. By this time, however, actual experiment had come to supersede theory and philosophic reflection in resolving the nature of gastric digestion.

II. EARLY EXPERIMENTS ON GASTRIC DIGESTION

Long beyond the period when direct attacks had been made upon the problem by experimentation, observers continued to philosophize concerning the nature of gastric digestion. Tyson reported in the *Philosophical Transactions* for 1683 that within the stomachs of snakes, which had ingested other small animals such as frogs, mice, or lizards, only a corrosive menstrum secreted by the gastric mucosa could be respon-

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sible for the observed changes in the ingested prey. In 1733, Vallisnieri studied digestion in the ostrich and came to the conclusion that the gastric juice is an active agent in digestion. Vallisnieri entertained a few reservations on this score, not being completely willing to disallow the idea of trituration. It was this circumstance that persuaded Réaumur to perform the well-known and telling experiment upon his pet kite. Réaumur placed meat in a metal tube with perforations. After the tube had been in the kite's (hawk) stomach for a period of time, the metal tube was withdrawn by means of an attached string. The digestion of the meat through the perforations established definitely the corrosive action of the gastric juice.

As was related above, John Hunter participated in the Belle Isle Expedition just two hundred years ago now. Having time on his hands, before the invasion of Portugal, Hunter used the free time profitably, in the winter months of 1761-62, making some very interesting observations on retarded digestion, as influenced by cold in fish, lizards, and frogs. When Hunter returned to England and established his experimental farm at Earl's Court, he resumed experiments on digestion. In the *Philosophical Transactions* for 1778, Hunter briefly alludes to these earlier observations.

It was probably the Belle Isle observations which prompted Hunter in 1772 to publish his thesis of the "Living Principle" relating to autodigestion of the stomach after death, which paper was subsequently included with a few alterations in the Animal Oeconomy collection published in 1786. In his well-known *Philosophical Transactions* paper in 1772, John Hunter said:

> Animals, or parts of animals, possessed of the living principle, when taken into the stomach, are not the least affected by the powers of that viscus, so long as the animal-principle remains; thence it is that we find animals of various kinds living in the stomach, or even hatched and bred there: but the moment that any of those lose the living principle, they become subject to the digestive powers of the stomach. If it were possible for a man's hand, for example, to be introduced into the stomach of a living animal, and kept there for some considerable time, it would be found that the dissolvent powers of the stomach could have no effect upon it; but if the same hand were separated from the body, and introduced into the same stomach, we should then find that the stomach would immediately act upon it.

Subsequent observations by Flourens, in 1831, Claude Bernard, in 1855, and Pavy, in 1856, served to challenge the validity of John Hunter's thesis of the "living principle."

Stevens, a candidate for the doctor's degree at Edinburgh, published a thesis, in 1777, in which he amplified the work of Réaumur by having dogs and sheep swallow perforated spheres into which he had inserted meat. Some of these were recovered in the stool. In other dogs, Stevens opened the stomachs after the metal sphere had been within the stomach for a few hours. Moreover, he had access to a juggler in a circus in the Edinburgh area who swallowed stones to amuse people. Stevens' subject did not vomit the spheres which he swallowed. Stevens observed the extent of digestion of the food in the perforated spheres after their recovery in the stool. Stevens was thus the first person to report extensively upon experiments on digestion in man.

In 1780, the Italian cleric, Abbe Spallanzani, published a long series of experiments upon fish, birds, cats, and dogs. Moreover, Spallanzani, an avid experimentalist, forced himself to vomit and made observations on the state of the regurgitated gastric content. However, Spallanzani found the experience so unpleasant he found it necessary to desist. Employing the technique so successfully used by the French observer, Réaumur, at an earlier date, Spallanzani made observations in several species of animals and was able to establish very definitely the corrosive action of gastric juice.

From 1796 to 1803, three important theses (Wilson, 1796; Spencer, 1803; and Young, 1803) bearing upon the nature of gastric digestion were published by students who were candidates for a doctor's degree at the University of Pennsylvania. These were all remarkable papers to have come out of an area in which medicine was being taught for the first time in an American school. The thesis of John R. Young, who died at the age of 22 of tuberculosis, was the most remarkable of the group. It has recently (1959) been re-issued by the University of Illinois Press. Young agreed with the conclusions of John Hunter that it was the "living principle" of the gastric mucosa which kept the stomach from digesting itself, a thesis which was to be disproved by Flourens, in 1831, Claude Bernard, in 1855, and Pavy, in 1856.

Despite the important experiments of Réaumur, Hunter, Spallanzani, and others, debate concerning the true nature of gastric digestion continued and is a problem not completely understood even today. Montegre (1812) insisted that digestion within the stomach added nothing beyond that afforded by saliva. Thackrah (1822) of Leeds was able to show, in dogs killed at intervals following ingestion of food, that the gastric juice had great digestive power.

It was the dedicated work of William Beaumont, American Army surgeon, upon his fistulous Alexis St. Martin which came to have greater influence upon the knowledge of gastric digestion of that day than of any prior work. Alexis St. Martin, the French-Canadian voyageur (June 1822), had been shot at close range with a shotgun, suffering a serious wound with a resultant large opening in the stomach; the shot also penetrated the thoracic cage, leaving the lung exposed. Beaumont was the only physician in attendance on Mackinac Island in the Straits of Lake Huron, and the nature of Alexis St. Martin's wound made it seem beyond remedy. However, through the assiduous ministrations of Beaumont, who assumed the role of both nurse and physician, Alexis, after a stormy and protracted convalescence, recovered but with a persistent gastrocutaneous fistula. In 1825, Beaumont began his classic observations upon the juice secreted by Alexis's stomach, removing the juice for study by means of a small rubber tube. Beaumont's most telling experiments were later performed at Fort Crawford in Prairie du Chien, not far from where the Wisconsin River joins the Mississippi, and finally at Washington, D. C., where he had help from Robley Dunglison in ascertaining the nature of Alexis's gastric juice.

Beaumont's studies were published in a small monograph which has since become a world classic and has helped greatly to establish once and for all the thesis that gastric juice has great digestive power. This thesis had been proposed by Tyson and reaffirmed by observation and well-conceived experiments by Réaumur, Stevens, Hunter, Spallanzani, and the Philadelphia group of observers.

The thesis of Matteucci's, in 1833, of generation of an electric current within the gastric mucosa as the source of the digestive power of gastric juice was a novel idea. Whereas Beaumont was able to demonstrate to his own satisfaction that there was a chemical agent within the gastric juice and that warmth was necessary for gastric digestion, he did not identify the presence of pepsin within the gastric juice as Schwann was able to do in 1836 by boiling the gastric juice, thus destroying its peptic activity. Eberle had supported the idea, in the year following publication of Beaumont's 1883 monograph, that all gastrointesinal mucosal extracts augmented the digestive action of hydrochloric acid.

Hippocrates had referred to "pepsis" as taking place within the stomach, a circumstance which persuaded Schwann to refer to the active digestive principle within the juice as pepsin. Wasmann of Berlin (1839) confirmed Schwann's observation on a number of omnivorous animals and was able further to purify it.

As related above, Claude Bernard submerged a living frog in a gastric fistula of a dog and noted digestion of the frog, an observation which served to set aside the validity of the "living principle" of John Hunter. A year later (1856), Pavy of Guy's Hospital was able to reaffirm the observation of Bernard. However, Flourens (1831), a member of the French Institute of Paris, using the sheep as his subject, had placed small animals (frogs, lizards) within the stomach through a gastric fistula and observed that they were digested. But Flourens's experimental subjects were dead upon withdrawal from the sheep's stomach, an occurrence which Claude Bernard avoided by holding the submerged frog with his hand, keeping its head outside the gastric fistula.

III. NATURE OF GASTRIC SECRETION

Réaumur, who first set aside the idea of the triturative process in digestion, found the gastric juice to be acid by testing it with blue litmus paper. In his first publication in the *Philosophical Transactions* of 1772, John Hunter believed a weak acid to be present within the gastric juice. In publishing his paper, "Some Observations on Digestion," in his monograph on *Animal Oeconomy* in 1786, Hunter seemed less certain of the acidity of the gastric juice. Spallanzani (1780), whose work helped a great deal to establish gastric digestion as an active process resulting from the presence of a corrosive fluid in the gastric lumen, sometimes found the gastric juice acidic and, occasionally, alkaline. He felt the nature of the food ingested was an important determinant of whether the gastric juice was alkaline or acidic. Scopoli (1780), the chemist to whom Spallanzani took this problem, apparently was of no great help; he too found the gastric juice to be acidic at some times and alkaline at others.

In 1824, Prout established definitely the presence of hydrochloric acid within the gastric juice. He extended his observations from rabbit, cat, dog, and horse to man. Children, also a Londoner, confirmed Prout's observation a few months later.

The French Academy of Sciences opened the subject of the nature of gastric secretion to essay competition in 1825. Two French observers, Leuret and Lassaigne (1825), concluded, from observations on dogs, that the acid in gastric juice was lactic acid. Two German observers, Tiedemann and Gmelin (1826), experimenting upon dogs, concluded that the acid in gastric juice was hydrochloric acid. The French Academy divided the prize equally between the observers. The German observers, feeling hurt by the decision of the judges, disclaimed any interest in the prize, but yet today their small monograph is more readily available in French than in German!

Beaumont, with the aid of Robley Dunglison, professor of medicine at the University of Virginia, at Charlottesville, concluded that the acid in the gastric juice of his fistulous Alexis St. Martin was hydrochloric acid. It is interesting that both Benjamin Silliman, well-known chemist of his day at Yale University (1833), and Berzelius, celebrated Swedish chemist, to each of whom Beaumont had sent samples of the gastric juice of Alexis St. Martin, concluded that the juice contained an acid of uncertain identity.

Flourens, in 1831, had established a gastric fistula in sheep. Blondlot (1843) of Nancy is usually credited as having made the first gastric fistula. A Russian observer, Bassow by name, made a gastric fistula on a dog also about the same time. Blondlot erroneously concluded that the acid secreted in the dog with a gastrocutaneous fistula was phosphoric acid. However, Braconnot of Nancy reported that he had analyzed gastric juice supplied him by Blondlot, a physician of Nancy, in 1835. Braconnot correctly established the nature of the acid in the gastric juice as hydrochloric acid. This is probably the same Blondlot who first made experimental gastric fistulas in dogs in 1843. Braconnot wrote as follows concerning the source of canine gastric juice which permitted him to make his studies:

> M. Blondelot, doctor at Nancy, is occupied right now in research on digestion; he has sent me some gastric juice, asking me to examine it. He had obtained it by having sponges swallowed by some dogs, and withdrawing them after they had remained for two hours in the stomach of these fasting animals.

It is interesting that so distinguished an observer as Claude Bernard and his associate, Barreswil, in 1844 concluded that the acid in the gastric juice was phosphoric acid. The observations of Bidder and Schmidt (1852) on the dog and sheep seemed to have settled the matter permanently in favor of hydrochloric acid. Lehmann in the same year concluded that both lactic acid and hydrochloric acid may be found in the gastric juice of the dog.

It is of interest that Francis Smith, a few years after the death of William Beaumont (1853), was able to persuade Alexis St. Martin to come to Philadelphia for additional observations. In 1856 Francis Smith recorded that re-examining the nature of the gastric juice of Alexis St. Martin demonstrated it to be lactic acid, the very year (1856) in which Pavy of Guy's Hospital confirmed the presence of hydrochloric acid in the gastric juice of rabbit, dog, and man.

When Oliver Wendell Holmes gave his well-known address to his class in 1861 at Harvard on "Border Lines of Knowledge," he stated it had finally been established that the acid in gastric juice was lactic acid. And so the debate continued until the electrolytic dissociation theory of Arrhenius, in 1883, made it possible by a more precise method to vindicate the findings of Prout, in 1824, and Beaumont, in 1833.

IV. GASTRIC INTUBATION

Gastric intubation probably was not used as a means of recovering gastric juice for purposes of analysis before the days of Adolf Kussmaul (1869), even though Fabricius Ab Aquapedente, in 1617, had used short-curved silver tubes for artificial feeding. Some of these he had even introduced through the nose. In 1744, Boerhaave had used flexible metal tube-like catheters for the removal of ingested gastric poison, as had Monroe II in about 1767. John Hunter employed eelskin–covered probangs for feeding in the presence of paralysis of the muscles of deglutination. In 1801, Renault had employed a gum elastic tube and a syringe to lavage the stomach of a dog and found the method simple and practical, a technic which Dupuytren applied in the removal of ingested poison in man as early as 1810. Physick of Philadelphia used a flexible catheter and a syringe for the removal of swallowed poisons and in 1812 reported its use in two young boys, one of whom survived attending employment of intubation gastric lavage and suction with a syringe.

In 1822, two years before the report of Prout, Jukes and Bush, independently, in London, had worked with gastric pumps, employing a rubber tube attached to a source of suction for the removal of poisons. In fact, Jukes took a toxic dose of poison himself, aspirated his stomach, and recovered after suffering only temporary indisposition.

In Kussmaul's day (1869), gastric lavage enjoyed a temporary period of popularity for lavaging the obstructed stomach and improving the health of patients with gastric disorders. Some fantastic tales are to be found in the literature attesting the validity of the thesis that gastric lavage is a health restorer.

A forerunner of the double lumen tube of Miller and Abbott was employed by the German observer, Ploss, as long ago as 1870. He used the tube for gastric lavage. Also in that period, an active source of gastric syphonage was employed by Jürgensen.

In 1874, Ewald used a soft pliable rubber tube for gastric intubation without a stylet. It was Hemmeter, twenty-two years later, who first intubated the duodenum with a tube of smaller diameter with the aid of a stylet. The more recent story of gastric intubation has been told by Paine, in 1934, and again in tabular outline by the present author in 1955.

V. DISCIPLINES CONTRIBUTING TO KNOWLEDGE OF THE STOMACH AND ITS BEHAVIOR

Matthew Baillie (1793), a nephew of the Hunters, had published the first description of diseases of the stomach, in which he pictured the round ulcer, described so well later by Jean Cruveilhier of Paris (1829).

Microscopic anatomy under Rudolf Virchov, in 1847, who wrote a devastating critique of Rokitansky's (1842 to 1846) humoral pathology, initiated an important era in the understanding of gastric disease. The development of dyes, which made it possible to examine stained preparations, greatly intensified an interest in interpreting and solidifying the findings of microscopic study. It is not without interest that Everard Home, in 1817, was the first to report upon the use of the microscope in studying preparations of the fundic glands. He erroneously concluded, however, that the secretory portion of the stomach concerned largely the antral mucosa. It is perhaps worth pointing out too that Home (1813) had prepared extracts from the gastric mucosa which he found had augmented digestion of a food bolus on in vitro suspension in mineral acids.

The long and fascinating story of the development of gastric surgery I shall skip over without comment, for it is a story which has been told repeatedly and is well known to all gastric surgeons. These halls have undoubtedly reverberated many times with the telling of interesting facets of the long and enchanting study of the development of operations for the relief of gastric disorders.

Gastroscopy, first described by Mikulicz in 1881 when his teacher, Theodor Billroth, was struggling with the development of gastric resection technics, is also a fascinating story. Only within the past few decades, with the development of the flexible gastroscope, has this important agency in the recognition of gastric disorders come to have fuller appreciation.

Roentgen's important contribution came in 1895, the year after Theodor Billroth, great hero of all abdominal surgeons, died. Radiography of the stomach, so important in the recognition of gastric disorders today, is essentially a development of the past four decades, within the memory of many here today.

The relationship of the stomach to pernicious anemia is still a tale which has only been partially unraveled. When the nature of gastric intrinsic factor has been clarified, at least one of the many baffling mysteries of this complex organ will have fallen to the continuing onslaught of scientific curiosity.

VI. GASTRIC TEMPERATURE AND GASTRIC DIGESTION

Hunter, Spallanzani, and Beaumont all appreciated that temperature affected gastric digestion. The work of Schwann helped to resolve the manner of its operation. Pepsin was the first of all enzymes described, and to the catalytic effect of such agents, not readily identified, Kühne in 1876 gave the name, enzym. A few years later, Langley of Edinburgh addressed himself to the matter of retarding the activity of pepsin by reducing the acidity of the gastric juice with the addition of sodium carbonate, thereby interrupting gastric digestion. There is often a long lag between discovery of an important fact and its implementation in clinical medicine. Since long before the turn of this century, every biochemist and clinician knew of the relationship of temperature to enzyme activity. I, too, had dabbled in the field of gastric secretion since the early 30s. As early as 1939, I began to appreciate the great sensitivity of the esophageal epithelium to injury by acid peptic juice: Presently it became clear through a succession of experiments that the esophagus itself could be employed as a method of testing the potential digestive power of gastric juice. It was this preparation which served as the key to the employment of local gastric hypothermia in the management of massive gastric hemorrhage—a story which I propose to tell now.

A. *Sensitivity of the Esophageal Epithelium to Reflux of Acid Peptic Juice.* Much of what I have come to know, concerning the stomach and its behavior, I have learned through a study of the esophagus. In 1939, I first had the opportunity of observing that resection of the stomach, undertaken in a patient with massive hemorrhage from a duodenal ulcer, succeeded also in bringing him relief from a co-existing idiopathic stenosing esophagitis which had necessitated more than 100 esophageal dilations over the preceding five years. After 2 dilations following the Billroth II resection, the patient refused the suggestion for continued dilation. Today, more than twenty-one years later, his esophagus admits a No. 46 esophageal bougie and there has been no necessity for further dilation. In 1942, I had the opportunity to reduplicate this observation. Thereafter, in my clinic, we came to speak of idiopathic stenosing esophagitis as acid-peptic esophagitis. A few years later, my colleagues and I implanted the full thickness of a small piece of the fundic gastric wall, with an over-all diameter of about 3 cm., into a slit in the dog esophagus, thus making the gastric implant a part of the esophageal wall. The gastric remnant, of course, was pedicled on its own blood supply. All such dogs died either of perforation of the esophagus or from hemorrhage from the resultant esophagitis. This occurrence added another link in the chain of evidence which implicated gastric juice in the causation of stenosing esophagitis or hemorrhage as complications of reflux of gastric juice into the esophagus. These observations also served to tell how very sensitive is the squamous epithelium of the esophagus to injury by acid peptic juice. Perhaps the most telling observation of all was that in which a tape ligature was placed around the pylorus of dogs to which daily intramuscular injections of 30 mg. of histamine were administered, the dogs being sustained meanwhile by the intravenous administration of saline and glucose solutions. The incidence of esophageal perforation and severe esophagitis in these dogs was high. The addition of a concomitant cervical esophagostomy increased this incidence. It was not, however, until the same experiment was carried out, following excision of the entire acid-peptic secreting area of the stomach, that it became apparent that neither perforation, esophagitis, nor injury to the esophagus occurred when only the antral portion of the stomach remained. This experiment served to tell that so-called spontaneous or hydrostatic perforation of the esophagus is acid-peptic perforation of the esophagus.

Presently, we came to know that perforation could be observed in a surprisingly short period of time attending perfusion of an intact cat's esophagus with the gastric juice of patients having duodenal ulcer. In fact, we have since (about 1950) come to use cat esophagus as a means of testing the potential digestive power of gastric juice. When the gastric juice of a patient with duodenal ulcer is acidulated to the optimal pH of 1.6, perforation of the cat esophagus or a grade IV severe esophagitis over a two-hour period of perfusion is almost regularly observed. In fact, we have observed perforation of the cat esophagus as soon as twenty minutes after starting such perfusions. This method of assessing the potential digestive power of gastric juice of patients suspected of having duodenal ulcer, and in whom no x-ray evidence of an ulcer was observed, has long been in vogue in our clinic. We had earlier observed that a two-hour period of perfusion of both dog and cat esophagus with 0.1 normal hydrochloric acid did little damage to the esophagus beyond reddening it somewhat.

In reflecting upon the well-known relationship between temperature and enzyme activity, it became apparent that perfusion of the cat esophagus might well be a method of assessing depression of digestive activity attending lowering of the temperature of the gastric juice and cooling of the cat. The temperature of the gastric juice aspirated from the stomachs of patients with duodenal ulcer was lowered to 20° and the systemic temperature was maintained at 25° C. over a two-hour perfusion period. In figure 1 is to be observed the contrast when such perfusions are done in the warm and the cold state. Severe esophagitis or perforation quite regularly attends a two-hour period of perfusion in the warm state, whereas in the cooled cat, maintained at a systemic temperature of 25° C. and with the per-

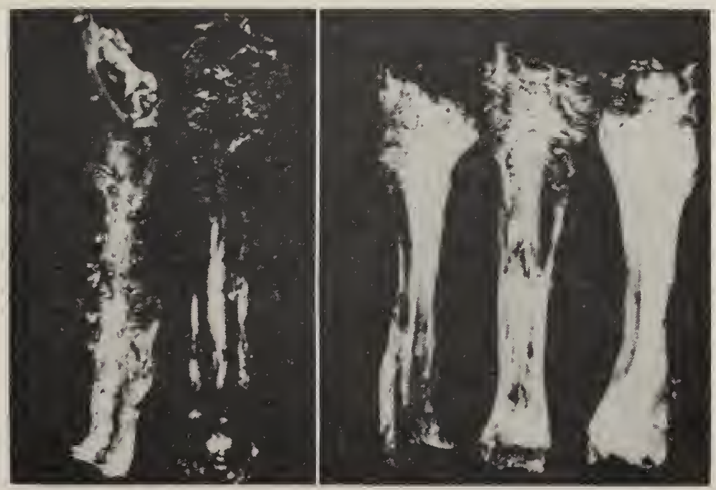

Fig. 1. The 2 cats' esophagi on the right show a perforation at the caudal end in one, and severe esophagitis and hemorrhage in the other. The 3 cats' esophagi on the left show very little evidence of injury. In each instance, perfusion was performed with gastric juice aspirated from the stomachs of patients with duodenal ulcer and acidulated to the optimal pH of 1.6 for pepsin. The striking difference was owing to the circumstance that the temperature of the cats whose esophagi appear on the left of the photograph was maintained at 25 to 30° C. during the two hours of perfusion and the temperature of the perfused gastric juice was kept at 20° C., whereas the temperatures of the cats' esophagi shown at the right were perfused at normothermic temperatures (38° C.).

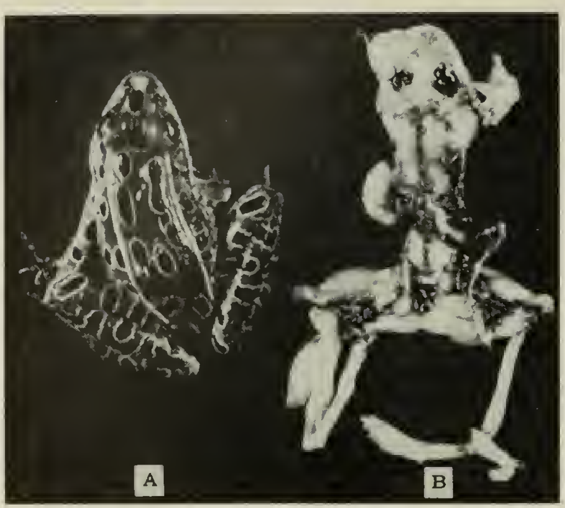

Fig. 2. These two small frogs were placed in a large bull frog's stomach for six hours and forty-five minutes. (a) One was a guest in the host's stomach in the ice box at 2° C. There was no evidence of digestion and the frog survived. (b) Digestion of the other frog was fairly complete in this period of time at 26° C. The frog is a poikilotherm and its gastric pepsin is active at this temperature, unlike warm-blooded creatures such as man and dog whose pepsin is inactive at temperatures under 30° C.

fused gastric juice at 20° C., little or no evidence of esophageal injury is observed.

The next experiment was to place a small Minnesota spring frog into the stomach of a large Louisiana bull frog, Figure 2, a and b, shows the striking difference when the guest frog resides in the stomach of his host at room temperature 25° C. (77° F.) and when the guest frog is within the host's stomach in the ice box at 4° C. (39.2° F.).

The same experiment was repeated in the dog, placing a frog in a small plastic canister with several perforations, thus permitting direct exposure of the frog to the action of the gastric juice. The frog in each instance was provided with an oxygen line and the canister with its frog was introduced into the stomach through a gastrostomy incision. Gastric perfusion through an inlying gastric balloon was carried out in both instances. The temperature of the perfusing fluid in the control dog was 37° C. (98.6° F.); in the cooled dog the gastric temperature was maintained at 10° to 15° C. (59° F.). In the warm dog, the guest frog was completely digested within ten hours. After thirty-six hours in the cold stomach of the dog, whose systemic temperature was maintained at near normal levels by peripheral heating, the frog came out intact and survived. Under our conditions, the Jonah story could be true (figure 3)!

B. *Local Gastric Cooling for Massive Gastric Hemorrhage.* These observations suggested that local gastric temperature might be employed to good advantage in arresting gastric digestion during massive gastric hemorrhage, a thesis which our experience has served to substantiate. By perfusing equal quantities of ice water and alcohol refrigerated to an outflow temperature of 10 to 15° C., with the aid of 2 sigma motor pumps, a perfusion rate through an inlying gastric balloon of 300 ml. per minute is achieved. This rate of perfusion reduces the gastric mucosal temperature within a few minutes to 10 to 14° C. Our usual practice is to maintain the gastric perfusion in the persence of massive gastric hemorrhage for five to eight hours. The stomach is first lavaged with a large Ewald tube and ice water to assist in hemolyzing any clots which may still be adhering to the gastric walls. Perfusion is achieved with the aid of the machine shown in figure 4. Improvement in the vital signs suggests that bleeding is slowing or has stopped. The inlying duodenal tube in the patient's other nostril also serves to give information on this point. When a normal blood pressure and pulse rate are sustained without need of further transfusions and the hemoglobin is rising, it is perhaps time to discontinue the cooling. At this time, a continuous drip of cold skim milk is

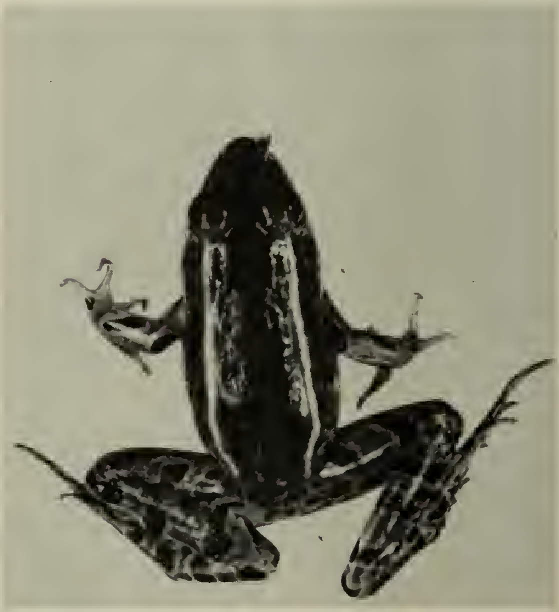

Fig. 3. The frog, with an oxygen line attached to his nose, has been readied for placement in a plastic canister with multiple perforations. Frogs have survived unharmed for thirty-six hours in a dog's stomach, when the gastric temperature was maintained at 10 to 15° C. over the period of observation.

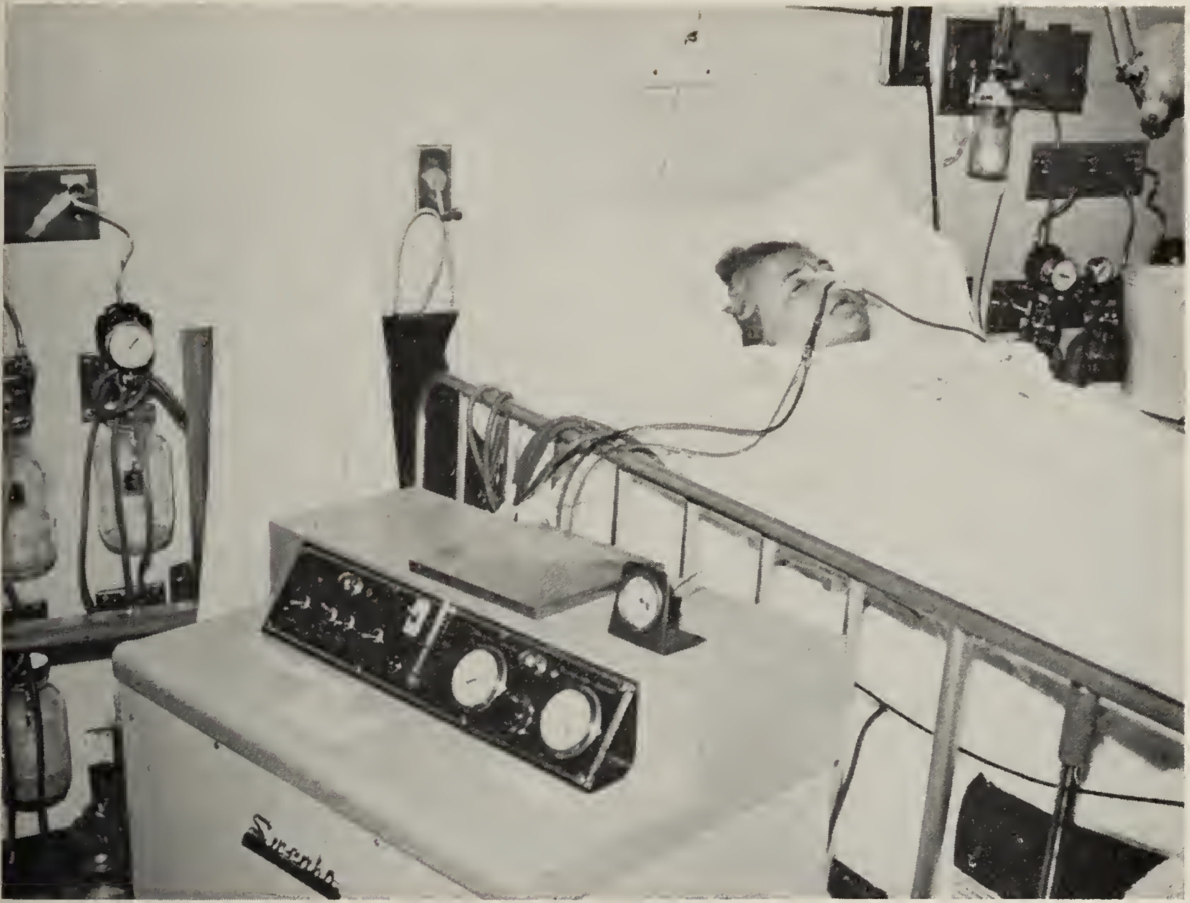

Fig. 4. Patient being cooled for massive gastric hemorrhage. The refrigerating unit is shown. The in- and outflow temperatures are measured and recorded throughout the procedure. For gastric hemorrhage, cooling is conventionally done at an outflow temperature of 10 to 15° C. over an interval of five to eight hours or longer if necessary. The nasogastric tube in the patient's other nostril serves to give information on the cessation or continuance of the gastric hemorrhage in which evaluation sustaining vital signs at normal levels without need for further transfusion is equally important.

The same cooling device is used for gastric freezing with an inflow temperature maintained at −17° C. for fifty minutes to an hour. The outflow temperature is maintained at −8 to −10° C. Determinations of gastric mucosal temperatures in the laboratory over these temperature ranges suggest it is maintained at −10 to −12° C. In clinical gastric freezing, the in- and outflow temperatures are carefully monitored and recorded every five minutes over the entire period of the freeze.

begun and is continued over a period of forty-eight hours or longer. If bleeding does not recur, x-ray and other studies are instituted to ascertain the nature of the lesion responsible for the hemorrhage.

Our best experience with gastric cooling for massive gastric hemorrhage has been in duodenal ulcer. In fact, no emergency operations have been done over the past four years, all patients with bleeding duodenal ulcer having been satisfactorily controlled by local gastric cooling.* Strangely enough, gastric ulcer does not respond as favorably as duodenal ulcer. A number of these patients have either re-bled or gastric cooling has failed in some instances to staunch the bleeding—circumstances which support the necessity for emergency surgery in instances of gastric hemorrhage in patients with large gastric ulcer craters.

After a short preliminary period of cooling, patients known to have massive gastric hemorrhage from a bleeding gastric ulcer often are sent directly to surgery. At operation, these patients are usually found to have large craters with open vessels, usually on the lesser curvature of the stomach with the bleeding vessel in the crater most often outside the gastric wall. Primary gastric freeze for massive gastric hemorrhage as yet has not been assessed in our hands, for if it were unsuccessful, the surgeon would probably encounter an edematous stomach.

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*In 1962, it was necessary to operate upon two patients with duodenal ulcer for hemorrhage, uncontrolled by gastric cooling.

Bleeding from esophageal varices has been quite satisfactorily controlled with the type of balloon shown in figure 5b. My son, Dr. Stephen L. Wangensteen, Surgical Resident at Columbia Medical School, devised this tube, with a long esophageal component, especially for bleeding esophageal varices. It is to be noted that, when inflated, the balloon also cools the fundic end of the stomach. Whereas gastroesophageal cooling can staunch bleeding from esophageal varices, the difficult problem of damaged liver function in cirrhotics still remains a serious matter to conjure with.

Gastric and esophageal cooling have set aside the need of employing the Sengstaken-Blakemore type of esophageal compression in bleeding from esophageal varices. Gastric and esophageal cooling achieve their ends through (1) reduction or inhibition of gastric secretion and (2) cooling of the stomach and esophageal and gastric walls. At 10 to 14° C., the conventional temperature employed in the management of massive gastric or esophageal hemorrhage, a reduction of arterial inflow of 70 per cent occurs.

Both physicians and pathologists need to differentiate more sharply than heretofore between erosive and hemorrhagic gastritis. The former condition lends itself readily to control of hemorrhage by local cooling. Hemorrhagic gastritis, on the contrary, has a sodden, heavy mucosa, and the entire mucosal surface bleeds. Most instances of this somewhat unusual manifestation of gastric hemorrhage have arisen as a conse-

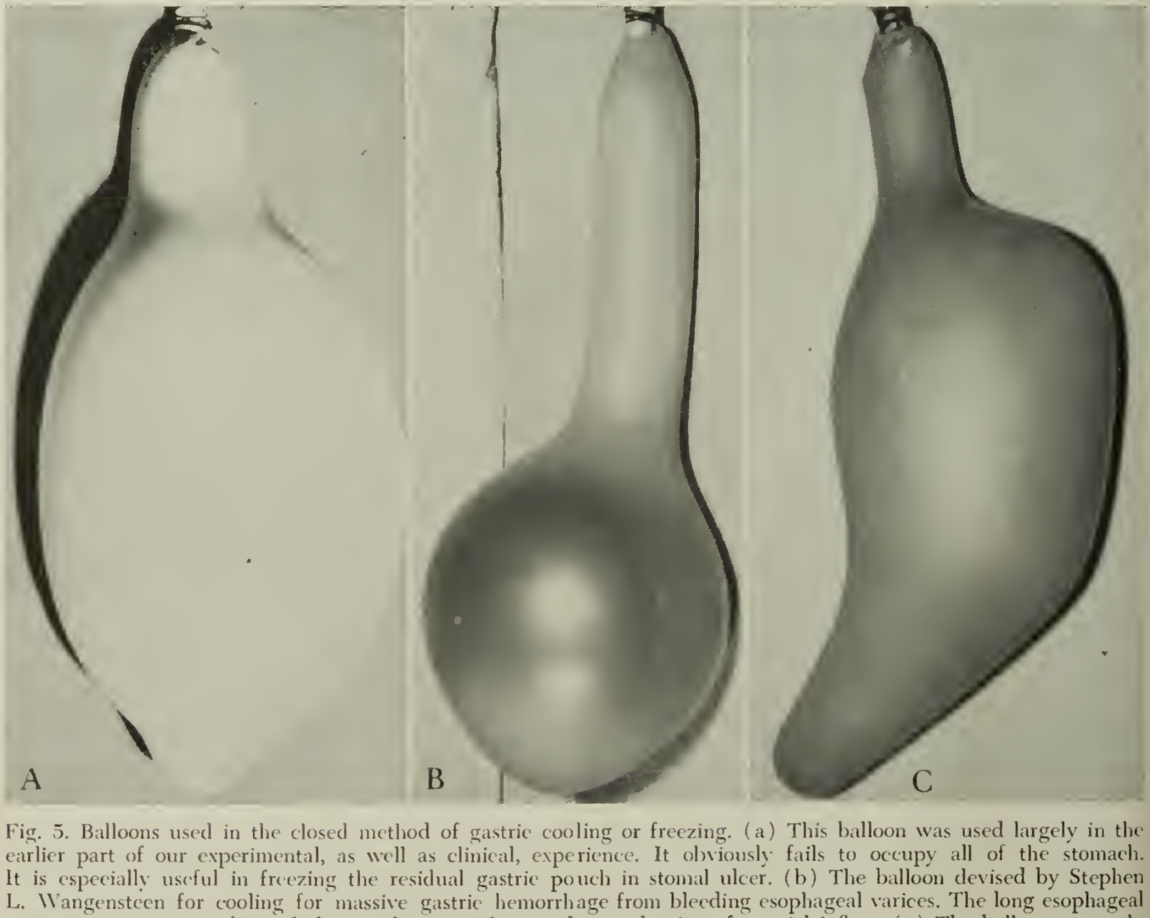

Fig. 5. Balloons used in the closed method of gastric cooling or freezing. (a) This balloon was used largely in the earlier part of our experimental, as well as clinical, experience. It obviously fails to occupy all of the stomach. It is especially useful in freezing the residual gastric pouch in stomal ulcer. (b) The balloon devised by Stephen L. Wangensteen for cooling for massive gastric hemorrhage from bleeding esophageal varices. The long esophageal component assures cooling of the esophagus with attendant reduction of arterial inflow. (c) The balloon currently used by us, both in dog and man. It has an esophageal component long enough to assure freezing of the vagi nerves at low inflow temperatures. It also has the advantage of occupying most of the stomach during the cooling or freezing process.

The degree of filling of the balloon, the thickness of the balloon wall, the duration of the perfusion, and the temperature employed during the perfusion—all these items are very important. However, maintenance of the body temperature by external heating to prevent a downward drift also is important.

quence of staphylococcal sepsis attending operations of magnitude, notably intracardiac operations. Local gastric cooling does control the situation temporarily. However, in our hands, salvage of life can only be achieved through timely surgical intervention after temporary control of the gastric hemorrhage by cooling. The situation usually demands a very extensive segmental gastric resection or total gastrectomy.

Patients with gastric cancer and hemorrhagic dyscrasias have been subjected to gastric cooling but with no suggestion of permanent control of the hemorrhage. Similarly, patients with extensive metastases to bone from cancer, who have bled massively from the stomach and have been subjected to local gastric cooling, exhibit no effective control of the hemorrhage.

The tendency to rebleed following gastric cooling in some patients with steroid ulcer is strong. In such circumstances, gastric resection is in order. Recent observations indicate that the influence of cortisone upon gastric secretion is mediated essentially through the antrum. A distal gastrectomy, therefore, is definitely in order in such patients.

C. *Freezing the Stomach in the Control of the Peptic Ulcer Diathesis.* During the past year, my colleagues and I have extended the hypothermic management of massive gastric hemorrhage to include cooling the stomach over longer periods of time in an attempt to affect the peptic ulcer diathesis favorably.

We began by maintaining the gastric mucosal temperature at 10 to 15° C. over a forty-eight-hour period and then permitting the gastric temperature to rise to 25° C., maintaining the temperature at this level for an additional three to five days. These methods were first evaluated in the dog and, when the factors of safety had been determined, were later carried out in patients with duodenal ulcer. Uniformly, subjective relief of pain was experienced by the patients. Moreover, under this management, duodenal ulcer craters were found to heal, and free hydrochloric acid disappeared or was markedly diminished in the overnight gastric aspirations. The stomachs of these dogs and patients with duodenal ulcer treated in this manner still responded, however, to ordinary stimuli such as peptone or insulin.

Observations were then made upon the tolerance of the dog stomach for mucosal temperatures maintained at 0 to 3° C. Such temperature depressions were achieved by using alcohol alone as the perfusing agent in the balloon. It was learned that a two-hour period of perfusion was well tolerated by dogs, with no suggestion of mucosal injury. This technique then also was employed in patients with duodenal ulcer. This shorter period of perfusion was at least as effective as the longer perfusion described above at a higher temperature level. Our first objective had been to encourage healing of duodenal ulcer craters by inhibiting gastric secretion, meanwhile feeding the patient with milk through an inlying polyethylene tube threaded well into the duodenum before commencing the gastric cooling.

Isolated gastric pouches of the Heidenhain, Pavlov, and antral varietes were then made in dogs. Meanwhile we had experimented with the tolerance of the dog stomach for gastric freezing and had observed that the dog could tolerate cooling of his stomach to surprisingly low temperatures. The critical temperature of the dog stomach for freezing for a period of an hour, without gross endoscopic evidence of severe mucosal injury, would appear to be in the area of −25° C. inflow temperature.*

Canine-isolated gastric pouches became unresponsive to stimuli when frozen at an outflow temperature of −10° C. for a period of an hour. The Pavlov pouch, when frozen, becomes unresponsive to insulin. The Heidenhain pouch, when frozen, fails to respond upon the dog's ingestion of 300 gm. of ground raw horsemeat many months after the freeze. Similarly, too, the isolated antral pouch after freezing is found to be unresponsive on perfusion of warm 10 per cent peptone, which elicits a vigorous response in the unfrozen pouch.†

A group of more than 20 patients have had their stomachs frozen over short periods of time. In 10 patients whose stomachs were frozen with the balloon shown in figure 5c, absence of free HCl in the overnight secretions was noted directly following the freeze. Six of these ten patients were achlorhydric. Responses of these stomachs to such stimuli as insulin and pepsin were definitely decreased.

Our experience leads us to believe that short periods of gastric freezing are well tolerated by man. Whereas, with the aid of a "booster" (dry ice or frozen CO_2), the stomach can be cooled to very low temperatures employing alcohol as the perfusing agent in the balloon, we have not yet found it necessary to use this technique. Gastric freezing has been done at inflow temperatures of −17 to −18° C. inflow, with outflow temperatures in the range of −8 to −10° C.

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*Today, with the rates of inflow (1500 cc. per minute) twice as great as those employed initially, the critical temperature for an hour's freeze is probably at the −18° C. (inflow) level. Employment of greater temperature depressions may be attended by areas of mucosal necrosis. The thickness or thinness of the balloon wall, the grade of distention of the balloon, the viscosity of the alcohol perfusant—all these factors figure prominently in determining the critical temperature tolerated by the gastric mucosa without necrosis.

†Many of these frozen canine gastric pouches continue achlorhydric at 15 to 18 months post freeze.

How long gastric responses to conventional stimuli such as insulin, food, or peptone, will be absent or greatly depressed cannot yet be said. The period of observation following gastric freezing for dogs has only been of six months' duration and for man, less than four months. If gastric secretion returns to a fairly normal level, as it probably will, the freezing process can be repeated with impunity. Gastric freezing today is an experimental venture and should be carried out under strict precautions under team management in a hospital.

It would appear that gastric freezing achieves essentially three things: (1) a selective thermal vagotomy without adverse effect upon gastric emptying; (2) inhibition of gastrin release from the antrum; and (3) a direct effect upon the parietal and chief cells, which occurrence can be demonstrated by reacidulating the gastric juice recovered from the stomachs of dogs previously frozen to the optimal pH of 1.6 for pepsin. In approximately 50 per cent of instances, such gastric juice exhibits little or no digestive power on meat bolus studies carried out at 37° C. after reacidulation, an occurrence which suggests injury to both parietal and chief cells.

Strangely enough, histologic evidences of injury to the gastric secretory cells are not as convincing as are the chemical data. To be certain, swelling of cells and pyknotic changes in the nuclei can be demonstrated, but these changes are not as striking as one might expect them to be. There are evidences, too, of damage to the nerve cells in Auerbach's plexus. Electron-microscopic studies will probably be necessary to determine more precisely the true nature and extent of injury to nerve cells, the mucosal plexuses secretory cells, and other structures of the gastric wall.

VII. THE MEDICAL SURGICAL GRIDIRON AND THE FUTURE OF PEPTIC ULCER SURGERY

There is constantly a tug-of-war on the medical gridiron between the internist and the surgeon. Sometimes one side has the ball, sometimes the other. Even so, both teams are moving in the same direction. It is the hope of all men, and physicians and surgeons alike, that disorders refractory to conservative management may be resolved by surgical means. When satisfactory means have been devised for treating by surgery disorders that are refractory to medical management, the battle on the gridiron goes on in an attempt to resolve the problem in a satisfying manner by lesser means. Said John Hunter: "This last part of surgery, namely operations, is a reflection on the healing art; it is a tacit acknowledgment of the insufficiency of surgery." Sir Reginald Watson-Jones entitled his Hunterian oration of 1959, "Surgery is Destined to the Practice of Medicine." Lord Moynihan, whose name we honor today, said of himself: "I am a physician doomed to the practice of surgery."

Will operations for the relief of uncomplicated, but intractable, ulcer become less frequent in the future?

If some of the manifestations of the peptic ulcer diathesis should prove amenable to technics aimed at impairing the capacity of the ulcer-bearing stomach to secrete a powerful digestive juice, certainly both patients and surgeons will welcome this inroad upon the activity of the surgeon. If physiologic gastrectomy can be accomplished by freezing the stomach, what a boon it would be to persons who suffer from some of the many manifestations of peptic ulcer. Our experience with gastric freezing has been largely with patients with unobstructed, intractable duodenal ulcer. A few patients with stomal post gastrectomy ulcer,* stenosing acid-peptic esophagitis, and hiatal hernia have also been treated by short periods of gastric freezing. Patients with gastric ulcer, in whom any suspicion of a gastric cancer lurks, must be subjected to gastric resection. For the garden-variety benign gastric ulcer at the incisura, gastric freezing perhaps could be invoked to insure against recurrence.

For long years, in many surgical clinics, the surgery of peptic ulcer has been the operation upon which young surgeons have cut their surgical teeth. Should operations for peptic ulcer become less frequent in the years to come, surgeons will have to come to depend more upon the correction of deformities, the repair of trauma, and the cure of cancer as the primary training ground for the development of future surgeons.

With the tremendous expansion of the fields of cardiac surgery, the endocrines, and others not yet completely explored, such as homotransplantation, I believe the surgeon need not despair for want of a useful outlet for his activity in the future. Surgery has been, and continues to be, an important agent in the advance of medicine, and I have the feeling that surgery will continue to expand and be adapted to new fields, even though, periodically, certain strictures may be imposed upon this activity by developments in other areas.

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*Thirty-eight patients with stomal ulcer have been subjected to freezing of the residual gastric pouch. There have been only two failures.

VIII. WILLIAM HUNTER'S CONTRIBUTION TO THE DIETARY MANAGEMENT OF PEPTIC ULCER

Some of you may wonder why I included both the Hunters in the title. William Hunter's well-known pontifical remark concerning the role of the stomach in digestion was made in Lecture II of his marvelous little monograph on *Introductory Lectures on Anatomy* (1784). However appropriate this pronouncement may have been in its day, it only served to indicate the despair felt by students of the stomach in trying to probe its mysteries. Said William Hunter: "Some have made the stomach a mill; some would have it to be a stewing-pot; and some a wort-trough; yet all the while, one would have thought that it must have been very evident, that the stomach was neither a mill, nor a stewing-pot, nor a wort-trough, nor anything but a stomach."

It was William Hunter who first advised the use of milk in the treatment of obstructive lesions of the gastric outlet. He tells the story of a young boy who had uncontrollable pain and regurgitant vomiting. Hunter advised the father to give the boy a succession of spoonfuls of milk and to increase the amount as the boy was able to accept the milk without returning it. William Hey of the Leeds Infirmary wrote William Hunter of his success in treating 3 patients in the manner which he credited to Hunter. Hunter died in March, and in July 1783 his paper entitled "Successful Cure of a Severe Disorder of the Stomach by Milk Taken in Small Quantities at Once" was read to the "Society of Physicians." It was published in *Medical Observations and Inquiries*, volume 7, in 1784.

This important contribution, which Americans are likely to ascribe to Sippy (1915) and most continentals to Jean Cruveilhier (1856), rightfully belongs to William Hunter. It is for this important addition to the armamentarium of peptic ulcer management that, whenever the subject of the stomach is mentioned, the name of William Hunter deserves to be remembered with his more illustrious brother, John.

ADDENDUM

Since its introduction five years ago, gastric cooling has come to be widely used as an emergency measure in the control of massive gastric hemorrhage of acid peptic–linked origin. Esophageal cooling for bleeding esophageal varices has come to replace use of the Sengstaken-Blakemore tube in many clinics as a more effective and safer agent.

Gastric freezing, devised as a definitive elective attack upon the peptic ulcer problem, is more controversial. It is certainly on trial, but only for its ultimate place in the armamentarium of ulcer management. Some contend it is ineffectual; a larger number insist it is dangerous. Only time can indicate how effective it will prove to be. Whereas there has been no mortality, gastric freezing, however, is not without hazard; the occurrence of 9 instances of postfreeze gastric ulcer amongst our 360 patients subjected to gastric freezing (440 separate episodes of gastric freezing) attests to this. A continuous intragastric drip of ice-cold skim milk maintained until the defect has healed usually suffices; however, in 2 instances perforation occurred, necessitating surgical closure.

The role of technique cannot be overemphasized. The development of safe guidelines, which are scrupulously followed, is a sine qua non. Until the techniques are better standardized, gastric freezing should be looked upon as an experimental venture, limited to university clinics and hospital centers where there are interested and experienced personnel willing to work as a team in pursuing the study.

It is of more than casual interest, however, that 5 Twin City hospital groups, following our guidelines, have frozen the stomachs of 243 patients without mortality and with only 2 observed instances of postfreeze gastric ulcer. Similarly, 5 university clinics throughout the country, working in cooperation with our group, have frozen the stomachs of 233 patients, also without mortality, and have experienced 3 postfreeze gastric ulcers. The lesser incidence of postfreeze gastric ulcer in these 2 groups (5 Twin City hospitals and 5 university clinics) bespeaks the importance of establishing guidelines and following them. When these have become more sharply defined, the method will be ready for wider adoption.

To the many surgical fellows of this department who have had an important hand in all the experimental studies of the past two decades relating to the subject under scrutiny and summarized briefly herein, the writer expresses his grateful thanks. The writer also wishes to express his genuine appreciation of the help he has received from his wife, Sarah D. Wangensteen, and from Mrs. Jacqueline Smith, assistant surgical librarian, in tracking down the various sources quoted in the text, almost all of which have been seen in the original. Drs. Karel Absolon and Aldo Castaneda, surgical fellows, have also been very helpful with several of the translations.

These materials were used as part of a Moynihan lecture, given at the Royal College of Surgeons, England, on January 10, 1962. (Ann. Roy. coll. Surg. Eng. 31:143-167, 1962.)

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The Development of Psychiatry at the University of Minnesota Medical School

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The most significant and crucial event relating to the emergence of psychiatry as a separate medical specialty is the long and fascinating struggle for an independent psychiatric unit at the Medical School at the University of Minnesota. This went on officially from 1919 until its opening in 1937. The author has separately written of some of the prominent men and developments in the early history of Minnesota psychiatry.[1] This period will thus not be discussed here beyond noting the roles of the first two chairmen of the Division of Nervous and Mental Diseases in the expansion of the department. From the official opening of the University of Minnesota Medical School in 1888 until 1913, Dr. E. Eugene Riggs was chairman of the division, a post he held gratuitously along with his full-time private practice. His resignation involved the issue of allowing the affiliation with the Mayo Clinic in Rochester to take place as part of the graduate school of the University. From the beginning of the Medical School until 1943, the Division of Nervous and Mental Diseases was a subdivision within the Department of Internal Medicine and was not fully emancipated until this latter date.

Early teaching of psychiatry and neurology laid a heavy emphasis on clinical demonstrations primarily by practicing clinicians who were mainly interested in neurologic disorders. The basic teaching hospitals were: University Hospitals, Minneapolis General Hospital, and Ancker Hospital, as they are at present, with the addition of the Veterans Administration Hospital. The teaching approach varied from that of the "uncanny" diagnostician who would brazenly announce the exact type and location of a brain tumor or spinal cord pathology to one of the suave and genteel scholar who flavored his teaching with references and quotes from medical and other literature. During the tenure of Dr. Riggs the first didactic course related to psychiatry was begun in 1908 when third-year medical students were required to take a course in psychology which was actually taught within the Department of Philosophy at the University.[2] When Dr. Arthur S. Hamilton assumed the chairmanship of the division in 1913, two textbooks were listed which medical students were required to read in conjunction with their clinics: Oppenheim's *Diseases of the Nervous System* and White's *Outlines of Psychiatry*.[3]

The major struggle and accomplishment toward the development of psychiatry was the establishment of a separate psychiatric hospital unit at the University Medical School. The remainder of this paper will deal with the struggle for this unit, as, until this period was completed and the ward opened in 1937, few changes took place in psychiatric teaching beyond the addition of more demonstration clinics pertaining to diagnostic techniques and courses related to neurology, such as neuropathology.

During the period of World War I, the movement for a psychiatric hospital at the university took origin under the tenure of Marion L. Burton as university president. There had been some discussions among private individuals and organizations in this period which culminated in a request in 1919 by the governor to the Board of Visitors for a report on the feasibility of a "psychopathic hospital" at the university. The Board of Visitors had been established in 1907 to study the care and management of institutions and to conduct investigations when called for by the governor. It had been created from fear that the Board of Control, in its preoccupation with organizational and fiscal matters,[4] would neglect the humanitarian concerns of institutions. During the inquiry by the Board of Visitors, President Burton was seeking ways for establishment of such a unit. Publicity had been increasing due to the efforts of members of the National Committee for Mental Hygiene who, in 1919, were circulating such pamphlets as "The

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Functions of a Psychopathic Hospital" by Dr. Ernest E. Southard and "Psychopathic Hospitals and Prophylaxis" by Dr. Frankwood E. Williams. Also, the awareness that other states had successfully functioning psychopathic hospitals was growing. The term "psychopathic" was then used in the sense that "preventive psychiatry" is currently used, the aim being research and training for the prevention of mental illness. The University of Michigan had operated a psychopathic ward since 1907, and Boston and Baltimore were operating similar units. Further emphasis was added due to the fact that both Iowa and Colorado had enacted legislation in 1919 to establish such units. There were many such psychopathic units attached to state hospitals and community hospitals throughout the country, but these were functionally nothing more than admitting or screening wards.

It is unfortunate that much of the legislative file of President Burton has been lost for it contained the earliest correspondence pertaining to the movement for a psychopathic hospital. However, on May 21, 1919, President Burton took up the matter with the Board of Regents. The stimulus for this had been a telephone call a day earlier from Dr. Jane Kennedy, a practicing physician in Minneapolis, stating that she had been at a conference in the East which Dr. Southard attended, and he had told her that there was a chance the federal government might be interested in establishing such a clinic at the University. The Regents voted to allow President Burton to take up the matter "without expense to the University."[5] It was disappointingly learned, in June 1919, that the decision of the federal government was to send some of their patients to the new Iowa institution and Minnesota thus lost out.

Dr. Elias P. Lyon had become dean of the Medical School in 1913. He was a Ph.D. in physiology and had been in the field at the time of some of its greatest achievements. At the time he became dean, Dr. Clarence M. Jackson, who had refused the deanship, became chairman of the Department of Anatomy. The two men thus entered the university together, both having been deans of medical schools previously—Lyon at St. Louis University Medical School and Jackson at the University of Missouri. At that time men such as hematologist Hal Downey, neuroanatomist A. T. Rasmussen, and Richard C. Scammon, whose interest was in physical growth and development, were in the Department of Anatomy. Lyon became dean at a time of turmoil. In January 1913, University President George Vincent had asked for the resignation of every member of the medical faculty, prefatory to making medical teaching a full-time responsibility and also to aid in fostering a transition toward emphasis on research in the Medical School. Before this time, the guiding principle at Minnesota was that "working at independent research was exactly like taking private patients. A man might honorably do either but he must be sure that such concern does not interfere with teaching duties for which he was paid."[6] It is interesting to note the complete shift in emphasis that has occurred since then with the great need today being for men who are willing and able to teach and not confine themselves to research or private practice. Besides the faculty reorganization, the problem of affiliation with the Mayo Clinic on a graduate basis was pending.

Dean Lyon had been a strong advocate of a psychopathic hospital from the very beginning of discussions. He had written to President Burton in June 1919, stating that for several years he and Dr. A. S. Hamilton had been advocating a hospital similar to that passed upon by the Iowa legislature. He further stated he had urged such a unit for several years before the State Board of Control, whose members had listened respectfully but taken no action. "There can be no doubt that there ought to be a psychopathic hospital in the state and that the real place for it is in connection with the Medical School where the best experts can be found for the early study of the insane. . . . An attempt should be made to restore them to health without the stigma attached to them of having been committed to an institution for the insane."[7]

By that time the report of the State Board of Visitors had been made. It came out frankly for a psychopathic ward in connection with the College of Medicine. They recommended a ward with a capacity for 100 patients and, to begin with, equipment for no fewer than fifty. They noted that, before graduation, medical students at the University had no practical experience in the observation, treatment, and handling of the mentally afflicted. Such a ward was advocated as a place where cases which "judges might consider borderline, mild or incipient" could be evaluated. It was felt that such cases would receive greater personal consideration and care than if sent to a large, overcrowded state hospital. Another idea suggested was that a psychopathic unit could act as a clearing house for new cases to be sent to the state hospitals.

At that time Dr. S. Marx White, chairman of the Department of Internal Medicine, was also chairman of the Hospital Extension Committee at the Medical School. The committee had favorably investigated the possibility of a psychopathic hospital. Plans were then made to present to the 1921 session of the legislature a request for a psychopathic hospital to be controlled jointly by the Board of Control and the Medical School. At that time Dean Lyon wrote to the various members of the legislature informing them of the favorable report from the Board of Control. The Hospital Extension Committee continued to stay active and, in November 1919, Dr. Douglas Thom of Boston, who was to start the Douglas A. Thom Clinic for Children in Boston as a child guidance clinic two years later, spoke to the committee at a luncheon. He felt that the Twin Cities needed a 90- to 100-bed psychopathic hospital. The favorable atmosphere created with the public and medical profession by the Boston Psychopathic Hospital was stressed. At that time the committee agreed to work for such a hospital. Dean Lyon urged that it be under the control of the University with only a legal connection to the State Board of Control.

The conflict between the Board of Regents and the Board of Control as to the ultimate control of the university and thus, also, the psychopathic hospital would not be settled until the final judgment on the Chase case in 1928. The Board of Control had been established by the legislature in 1901 to manage the "charitable, reformatory and penal institutions of the state." University President Cyrus Northrop had then supported the plan, not believing the state government would classify university projects and personnel within this framework. An early law suit had established that, as a "charitable institution," the university was within the scope of the Board. Antagonism was thus aroused and Board control of the purse strings tightened further. In 1904 President Northrup used a combination of fatherly reproach and shaming techniques to get a bill passed that removed the university from the authority of the Board of Control. However, this very issue was recreated in 1925 when an economy-minded governor, Theodore Christianson, set up an agency called the Commission of Administration and Finance which attempted to regulate economic transactions of the university exactly as the Board of Control had done previously. The inevitable collision came over plans to extend insurance to certain university employees; the Board objected and a test case was enjoined over the issue of whether or not the state had this type of authority over the university. The case was argued adroitly by the dean of the Law School, Everett Fraser, against the state attorney general. On June 7, 1928, the final decision of the Minnesota Supreme Court established that "the whole power to govern the University was put in the Regents by the people."[8] The absolute authority of the Board of Regents to govern the university was established. However, in 1919 the apprehensions of Dean Lyon over the future control of the psychopathic unit were well founded.

Soon after Lotus D. Coffman became president of the university in 1920, he wrote a letter to Dean Lyon noting that the last president had considerable correspondence pertaining to the establishment of a psychiatric hospital. He wondered if any definitive conclusions had been reached. Dean Lyon responded by sending the new president the favorable report of the State Board of Visitors and noting that plans were to present this matter to the next legislature. In August 1920, the State Board of Control scheduled a conference regarding such a hospital which any interested person could attend and where he could state his views pro or con. On that occasion Dr. Hamilton was the representative from the Medical School; the Administrative Board of the Medical School, the members of the Division of Nervous and Mental Diseases, and the Board of Regents were also all present. In the fall of 1920 the Administrative Board of the Medical School officially requested the Board of Regents to ask that the Board of Control erect and provide for a psychopathic clinic and that the control of the building should rest with the Board of Regents. The function of the Board of Control would be to present this claim before the state legislature. Following this proposal, Mr. Fred B. Snyder, president of the Board of Regents, appointed a special committee composed of President Coffman and three regents: Dr. Will Mayo, Mr. C. L. Sommers of St. Paul, and Mr. G. H. Partridge of Minneapolis to deal with future matters regarding the psychopathic hospital.

This subcommittee of the Board of Regents soon arranged a meeting with the State Board of Control which the superintendents of the state hospitals attended. Mr. Pierce Butler and Mr. J. G. Williams from the Board of Regents also attended this meeting on November 30, 1920, at the state capitol as did Dean Lyon and Dr. Hamilton, who marshalled the evidence in favor of a 75-bed hospital. Agreement was reached on the need for such a hospital and a joint committee to work for it was selected; from the university, President Coffman, Regent Mayo, and Dean Lyon would participate while, from the Board of Control, chairman Dr. P. A. Hilbert and the superintendent of the Rochester State Hospital, Dr. Arthur S. Kilbourne, would do so.

As the time approached for introduction of the bill into the legislature, publicity of it spread but it was haphazard. Various groups in the community who wanted to support the measure were not included in any centralized planning for its accomplishment. Thus, the Minnesota Committee for Social Legislation, with several prominent citizens in its membership, noted in a letter to Dean Lyon in February 1921 that, at their last two meetings, questions regarding the bill had arisen for which they did not have the information to answer. They wanted to know when a bill would be introduced and what they might do to help out. Notice of the proposed building had appeared in the "Modern Hospital" magazine which also resulted in a letter from a Madison Avenue advertising firm which wanted to offer its services in obtaining funds and educating the public.[9]

There were four drafts of the proposed bill before it was finally submitted to the legislature. After these years of planning, hopes were high that construction could even begin on the hospital the same year. These hopes were all dashed when the state legislature voted down the bill in March 1921.

This defeat produced some criticism of the medical profession in the state as to why it had not supported the bill more enthusiastically. The State Medical Association had passed a resolution at its October 1920 meeting which held, "The House of Delegates of the Minnesota State Medical Association strongly recommends to the Board of Regents that action be taken leading to the establishment of a psychopathic hospital and conducted as a part of the University Hospital." However, no such communication ever reached the Board of Regents until *after* the defeat of the bill the next spring. At that time the secretary of the Minnesota State Medical Association sent the Board of Regents the above resolution stating that "it indicated the sentiment of the medical profession of the state."[10]

Attempts to correct the faulty planning in respect to getting a bill passed began in 1922 in preparation for the next legislative session. A "General Committee" for the psychopathic hospital was arranged with President Coffman a member of it. The support of various state organizations was obtained which was publicly and aggressively utilized. This time it was noted that the bill was backed by the Board of Control, the State Board of Health, the State Medical Society, and the Southern Minnesota Medical Society. Copies of these endorsements were sent to physicians in the state and also to other key personnel such as judges and attorneys.

As the chances for passing such a bill became more probable, the opposition organized and became more apparent. As early as 1920, Dr. E. T. Fitzgerald from the Public Health Service at Morris, Minnesota, felt that there was a need for community hospitals in the rural areas of the state and the university could participate as a central bureau of information. This proposal seemed to have anticipated the community mental health centers by forty years but did not solve the need for a psychopathic hospital. Another example of opposition came from businessmen such as Mr. Charles R. Wright, secretary and manager of the Charles Wright Company, "the Wright place for Holsteins," in Fergus Falls, Minnesota. He felt that the Twin Cities had the "floating cases on the borderline, not ripe for insane asylums and a nuisance running loose." He opposed the psychopathic hospital because he believed it would be too expensive to run. He asked, "Why should the state go into this enterprise when it cannot take proper care of the cases it already has?" It was his belief that the patients got as good care at the state hospitals as they would get at the new unit and at much less cost.[11]

Despite the improved preparation for passage of the bill, Dr. Will Mayo felt its chances were poor because "the present legislature seems to have it in for the University and Board of Regents. . . . The condition looks rather unfavorable for progressive legislation of any kind."[12] At that time Representative Mabeth Hurd Paige had introduced a bill in the House and Senator John C. Sweet, in the Senate. Mrs. Paige was to be a long and ardent campaigner for the measure over the years. She had been the first woman in the history of the state to file and to be elected to the Minnesota legislature in 1922. Many of the lawyers who would serve in the legislature knew her through acquaintance with her husband, who was a law professor at the University. Although always considering herself a Republican, she was disappointed, on entering politics, by being greeted with indifference and resentment from her party leaders; consequently her electoral support for twenty-three years came from all political elements. In her first campaign she made mental health the chief issue. She had hoped an institution would be constructed in Minnesota similar to the Boston Psychopathic Hospital in Massachusetts.

Other sources of opposition were also beginning to coalesce, among them Dr. G. C. Welch, the superintendent of the Fergus Falls State Hospital. It appears that some of the physicians working in the state hospitals were also opposed to the legislation as they feared such a hospital would take their patients away from them. It was also easy to foster the fears of rural groups that if the state hospitals lost their patients, they might close down and consequently take employment away from the areas. The rural legislators also tended to interpret the needs of the state in terms of their own crop fortunes. Commenting on this opposition of farmers, President Coffman said, "I am hoping, however, when the water begins to run in the streams again, the grass becomes green and the birds begin to sing, that some of our farmer members may take a more hopeful view of life, and that our appropriations will be increased correspondingly."[13] Another opponent of the bill was Senator A. J. Rockne (the "Rockne of Gibraltar") from Zumbrota, Minnesota. Besides questioning the wisdom of appropriating money for such a purpose, he felt that "crazy people should not be mixed up with students on the campus." It must be added that in the final hour he did support the measure and later hoped the bill might "do something toward relieving humanity somewhat."

The opposition had mounted to the point where the National Committee for Mental Hygiene asked the medical director of the Michigan Psychopathic Hospital at Ann Arbor to have President Burton of Michigan, the former president at Minnesota, write to Senator Sweet. Burton did write, incorporating the director's opinion that "no medical school can give modern instruction that has no facilities for psychiatric instruction." It would be 14 years before such "modern instruction" would be available at Minnesota.

Passage of the bill was a feat in its own right. At 2 A.M. on the last day of the session, Mrs. Paige discovered her House bill had been referred to the Public Health Committee in the Senate instead of to the Finance Committee where the companion Senate measure was. In the one hour remaining she succeeded in getting the bill reported out of the former committee, re-referred to the latter committee, and favorably acted upon by that group. All that remained was to have a Senator Haagenson select the bill as the one he would contribute under a working arrangement whereby the senators, listed alphabetically, would get a chance to propose a bill in the final minutes before closing. Luckily, the bill made it although the committee never did get beyond the letter "J". Mrs. Paige later commented that she had learned two things in her first term: legislators skip all but compulsory attendance, and dogged persistence and education are needed to get support to pass any bill.

On April 19, 1923, the governor approved the bill and the first law providing for a psychiatric unit at the university was passed. This was to be the basic act which still governs the department. The act specified that the psychiatric unit was to be part of the Minnesota General Hospital (now the University Hospital) system and was to be "erected, equipped, maintained, and administered for the care, observation, study and treatment of defective persons as defined in existing statutes."[14] The hospital was told it could run an outpatient service and "conduct clinics, investigate conditions or conduct educational work in regard to mental disease in any part of the state." It was further specified that the Board of Regents should appoint a medical director of the psychopathic department who should "receive the co-operation of all experts in the employ of the University." The same law was incorporated into the more permanent listings in Minnesota Statutes for 1927.

Carrying out the provisions of the act was a different matter. The legislature had only appropriated $15,000 for a two-year period. This was grossly inadequate for anything approaching a hospital, but it did allow the university to secure Dr. George S. Stevenson, who was later to be director of the National Association for Mental Health, as an assistant professor. He was the first full-time physician in the Division of Nervous and Mental Diseases who did not have a private clinical practice. Dean Lyon showed good judgment in evaluating Dr. Stevenson when he said, "We have made a very good 'find' in getting Dr. Stevenson for this position as psychiatrists are rare and men of the right qualities are even rarer."

With the meager budget provided, the only service that could be given was a mental hygiene clinic for children. On two occasions psychiatric emergencies with adults were handled. The only personnel available besides Dr. Stevenson were a social worker and a stenographer. Psychologic testing had to be paid for on an hourly basis. The clinic functioned in three different ways: (1) It had a central clinic at Millard Hall where children could be referred from all over the state as part of a demonstration clinic. (2) There were permanent part-time clinics in populous centers. These were at Duluth, where a full-time social worker ran the clinic regularly, and Mankato, where a unit was established at the State Teacher's College and case work was done by four local nurses. (3) Temporary traveling clinics lasting one week were held in places where there were agencies that could use them and put into effect the results of such a consultation service.

Two of these were at Chisholm where the agency contact used was a local visiting teacher who had had training in psychiatric social work and the third was at Albert Lea where the agency contact to handle cases was the local grade school supervisor. When it was time for the 1925 legislature to convene, a request was made for a $25,000 appropriation for the next biennium. Not only was this amount refused but no money at all was appropriated. The 1923 legislature was the last one to appropriate money for the psychopathic hospital until 1935. The small but enthusiastic start thus collapsed in its infancy. The demonstration child guidance clinic had already ended at the university and now, with the failure to appropriate funds, Dr. Stevenson also left and it appeared that the effort had been in vain. The surprising thing is that, despite these major setbacks, the idea of respecting the need for improved and expanded psychiatric care had taken root in the community.

The 1929 legislature again failed to grant funds. The impression one gets of President Coffman's reaction at that time is that he had grown weary of campaigning. It was not that he did not desire a hospital unit but that repeated frustrations and age had dampened his will to carry on the fight. Thus, in 1928, a ten-year building program for the university had been agreed upon by the Board of Regents and an interim commission of the state legislature. The psychopathic unit was not included on this list. On the urging of Dean Lyon, President Coffman took up the matter with the Board of Regents, requesting them to prepare a special bill. The Board was unwilling to do this and would only insert a phrase in the biennial request calling attention to the "advisability" of such a building. Following this up, in December 1930, Dean Lyon wanted the Board of Regents to approve a resolution approving the campaign for a psychopathic hospital. President Coffman turned this down, stating it would give the legislature the impression of not keeping faith with them in respect to the ten-year building agreement. This was a far cry from the President and the Board of Regents of a few years earlier.

The Statewide Committee for the Promotion of the Psychopathic Hospital had been formed in 1928. Its chairman was Dr. S. Marx White, who had headed the University Hospital Extension Committee for several years; its executive secretary was Dr. Richard O. Beard, one of the charter members of the Minnesota Neurological Society in 1910. Its purpose was to obtain local support for the proposed hospital from a statewide organization. Members of the committee were appointed by the Minneapolis Council of Social Agencies, the St. Paul Community Chest, the Duluth Community Fund, and other local bodies. The list of state, city, and county organizations supporting the measure proceeded to grow. In January 1931, Drs. White and Beard reviewed a manuscript regarding the psychopathic hospital which had been sent to them by President Coffman. They felt it contained only meager support for the project. Fifty organizations were noted to support the measure. These included interested departments at the university, the State Board of Control, the State Sanitary Conference, the American Legion in Minnesota, Federated Women's Clubs, county child welfare boards, the county and state medical associations, and district and probate judges, among others. It was noted that the only medical school in the state was destitute of clinical psychiatric cases to be used in training future doctors and nurses.

The two doctors mentioned that the Statewide Committee was continually meeting a common obstacle to passage of the bill from state legislators who would ask, "Why is the project not actively supported by the university?" The only answer from the Board of Regents was that they did not feel they could include a request for a psychopathic hospital in their immediate building program. The Promotion Committee had also invited Dr. Franklin G. Ebaugh, director of the Psychopathic Hospital at Colorado, to the Twin Cities in January 1931 to speak in behalf of a hospital. He addressed many groups at the university and also a joint session of the legislature.[15] The unfortunate result of this was that his message was misconstrued as saying that such a hospital was a step toward the immediate elimination of schizophrenia. This evoked images of the existing state hospitals closing down with hardship for the laymen and professionals in local areas. This attitude and reasoning seem incomprehensible, yet they are illustrative of some of the reactions at that time which contributed to repeated defeats and frustrations for the hospital proposal.

As might be expected from this unfavorable response from the university and legislative leaders, the bill again failed to pass in the 1931 session. Many animosities were aroused during this session. Mrs. Paige felt that President Coffman had not adequately supported the measure. Unfavorable comment was also made about the appropriation of $2,155,000 for state buildings while there was nothing for the psychiatric ward. At hearings before the Senate Finance Committee during the session, various members of the State

Board of Control had testified against the measure although the Board was officially on record as supporting it. The final vote of this committee was 15 to 5 against appropriations and the bill never got to the Senate floor for a final vote.

At this point a sad story in the medical history of Minnesota must be mentioned. Ever since Dr. Lyon had been appointed Dean of the Medical School in 1913 he had been under attack by various groups. At first it was the old faculty members who had not secured reappointment in the Vincent reorganization. By the third decade the opposition to Dean Lyon was headed by the younger physicians of the Minnesota Alumni Association. There was some dissatisfaction about Dr. Lyon's not being an M.D. The result was that in 1931 Richard E. Scammon, M.D., was invited back from the University of Chicago to assume a new position as dean of Medical Sciences. Dr. Lyon continued as dean of the Medical School but the delineation between the two deanships was never made clear. The result was that the aging Dr. Lyon was overshadowed by the forceful Dr. Scammon. In fact Lyon was so bypassed that Gray mentions a faculty historian's dating the end of Lyon's deanship as 1931 although he actually served until 1936. This shift was an unfortunate blow to the immediate status of psychiatry. Not only was Dr. Scammon skeptical of psychiatry but he also opposed construction of a psychopathic hospital, stating that it would not be supported consistently by the legislature, once it was up, anyhow.[16]

By 1932, the Promotion Committee, taking account of the severe financial depression, decided not to push an active campaign for the hospital with the 1933 legislature. They did request President Coffman and the Board of Regents to continue the project and mention it in their publications as one of the needed features of the university program. At this point Dr. Scammon was noted to have taken Dr. Lyon's place as representative of the university at these meetings. Early in 1933, Dr. Beard had given a talk before the Women's Club of Minneapolis advocating a psychopathic hospital. Dean Scammon heard of this and felt compelled to write a letter to the organization conceding Dr. Beard's right as a citizen "to advocate any expenditure of state funds he deems fit," but, "the University [sic] deplores that publicity is given to a project for its expansion that has not received official sanction."[17] He went on to state that as the dean of Medical Sciences and official representative of the medical faculty to the central administration of the university, he had not requested directly or indirectly that a psychopathic unit be included in the university requests. He had also pointed out to President Coffman the opening of a psychopathic ward at Minneapolis General Hospital whose facilities would presumably prove adequate for psychiatric needs. At that time a division in the Board of Regents regarding support for the psychopathic hospital was also discernible. With this official attitude the measure stood small chance of passing. Despite this official opposition, community support was still growing as the House passed an appropriations bill which Mrs. Paige had introduced. However, the Senate failed to pass it "on the grounds that the university had not asked for the new hospital."[18]

When the time came for the 1935 legislature to meet, President Roosevelt's first term in office was nearing completion, and the situation in the state government was quite chaotic. The governor of Minnesota at that time was Floyd B. Olson, a member of the Farmer-Labor Party of Minnesota. The 1935 legislative session was probably one of the most eventful in a long history of exciting legislative sessions with near riots and mob gatherings being the setting for the meetings.

The passage of the bill in 1935 which would give the psychopathic hospital funds for the first time since 1923 had as dramatic a history associated with it as the passage of the earlier bill. There had been many hearings in the Senate Finance and House Appropriations committees relative to the establishment of a new state hospital in the northeastern section of the state. Some testimony had been brought in at these hearings with respect to the need for funds at the university, and there had been some specific bills introduced with this objective in mind. Thus, Senators B. C. Kingsley and W. P. Wolfe had introduced a measure into the Senate on February 18, 1935, to appropriate money for the "psychopathic department of the University." It was read in the Senate once and died after referral to the Committee on Finance whose chairman was the same Senator Rockne who had been involved ambivalently with the measure ever since the first hospital bill had been passed. In the House Mrs. Paige had introduced a bill on February 15 and another on February 21, 1935, both of which were read once and referred to the Appropriations Committee where they were never heard from again.

With one week of the legislative session remaining, a measure having to do with the future Moose Lake Hospital was introduced into the House. This bill was read three times, passed, and then was introduced into the Senate where certain amendments were inserted, such as: The site chosen should be "an area of not less than 640 acres of good agricultural lands." The Senate passed the amended version, but the House refused to concur on these amendments and a joint committee was appointed to attempt working out the disagreements. At this point nothing concerning the university psychopathic hospital had been inserted in any of the legislation. Before the joint committee, supporters of the bill, such as Mrs. Paige, got an opportunity to introduce it and to bargain in the give-and-take manner in which legislation is passed. The result was that the joint committee bill which was reported out contained a new section which had not been present in either of the previous bills. This was section 7 of the 15 sections contained in the bill and was the smallest section in the whole measure. It was passed in the House by a vote of 112 to 0 and in the Senate by 37 to 0. It authorized and directed the Board of Regents to proceed with the following "improvements": psychopathic hospital, $75,000 and equipment for the psychopathic hospital, $12,000—a total appropriation of $87,000. The bill was signed by Governor Olson on April 29, 1935. However, this still only provided for construction and equipment without funds to administer the unit once it was built.

When Governor Olson called a special legislative session seven months later, an effort was made to obtain a $75,000 maintenance bill. This was felt urgent enough to wire President Coffman, who was out of town at the time, urging that permission be given to W. T. Middlebrook, university comptroller, Dr. Diehl, Dr. McKinley, and Ray Amberg, superintendent of the University Hospitals, to introduce such a measure before the president returned home. President Coffman urged that inquiry be made regarding the availability of federal funds and to consult Mr. Snyder of the Board of Regents about the matter. Such a bill was introduced which noted the bill earlier in the year had been passed without funds to run the new unit. An appeal had also been lodged in the interval to the Public Works Administration (PWA) for a grant. This grant at that stage had been approved by the PWA administration, President Roosevelt, and the comptroller general of the United States for $58,575 for the "psychopathic roof house." A further request was thus made to the special session for "support" for the department of $75,000 yearly for the two-year period which would end June 30, 1937. This measure failed to pass, but the building plans went ahead since the appropriation had been adequate for this. However, no such "psychopathic hospital" was constructed. Instead, an addition was built over the Todd Memorial section of the then existing structure of the University Hospitals.

As the unit neared completion it was evident that there would be no money to operate it. Dr. Diehl wrote to President Coffman in September 1936, noting that $75,000 per year would be needed as a minimum for its operation. This request was made to the state legislature in 1937. The result was that it appropriated $62,500. The final figures for the construction of the psychopathic hospital show that the total cost was $146,304.17 which was met by: special state appropriations, $70,755.31; federal grants (PWA), $57,831; and funds from the general University fund, $17,717.86.

The final culmination of all these years of effort was the opening of the psychopathic hospital on April 27, 1937, with Mrs. Mabeth Hurd Paige being given the honor of admitting the first patient at the opening ceremony. The biennial request for $75,000 annually continued up to the 1943 legislature with the appropriations slowly creeping up to a grant of $70,000 a year at that time. In 1945 the request was for $85,000 annually, but the appropriation of the legislature was for $90,000, a near revolution in legislative thinking in ten years. An indication of the present general budget given by the legislature for 1958 to 1959 indicates the revolution has continued. Thus, an appropriation of $533,181 was given for the psychopathic hospital and $207,236 for the child psychiatry hospital, a total of $740,417. This was also exclusive of special research grants and budgets.

SUMMARY

This paper has reported the long struggle to achieve a psychiatric unit at the University of Minnesota Medical Center for undergraduate and graduate training and research. It has attempted to present the factors behind its development and the struggle that took place to achieve it. The various social, cultural, and individual forces that combined to oppose it for so long have been mentioned. The final culmination of the efforts of those who had worked for it was its opening in 1937, which paved the way for the introduction of modern psychiatry and expansion to include divisions of neurology, clinical psychology, and both child and adult psychiatry.

The author wishes to thank Dr. O. Meredith Wilson, President of the University of Minnesota, for permission to use the President's Private Papers during the writing of this paper.

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OPEN-HEART SURGERY may give good results in acquired aortic valve disease, but until procedures and prostheses have been perfected the technic is best reserved for patients with well-advanced and symptomatic disease. Left ventricular failure is most likely to be improved after operation, while aneurysmal valvular incompetence responds poorly. The contracted, thickened cusps seen in rheumatic incompetence of the aortic valve must be replaced by total prosthetic reconstruction. Perforation of a cusp, caused by bacterial endocarditis, may be closed by suture or patch, or the cusp may be replaced. If a simple aneurysm of the ascending aorta is responsible for valvular incompetence, bicuspidization or annuloplasty may give good results; other technics may have to be improvised if the aneurysm is dissecting. When the extent of calcareous aortic stenosis permits, debridement of leaflets and incision of fused commissures gives excellent results. These lesions always cause a systolic pressure gradient, which is nearly always reduced by operation. When calcification is too extensive for debridement, cusps may be replaced, or total prosthetic reconstruction may be necessary. Direct perfusion of both coronary arteries is begun after the root of the aorta is opened and continued throughout the operation. The heart should not be cooled externally and long-term antibiotic therapy should be instituted after the operation. About half of patients recover without postoperative complications.

A third of 60 patients undergoing operation for aortic valve incompetence died in the hospital. Total reconstruction for rheumatic incompetence had only a 25% mortality rate, however, and only 2 of the last 15 patients so treated died. Cusp perforation had a mortality rate of 33% and aneurysmal valvular incompetence a rate of 55%. Late operative results were good in 77% of traced survivors. Hospital mortality was 25% in 144 patients treated by debridement or reconstructive procedures for aortic valve stenosis. Systolic pressure gradients were completely or virtually abolished in 54% of patients surviving debridement, and only 9% had a residual gradient greater than 50 mm. Hg. Even these high residual gradients represented a postoperative reduction.

DWIGHT C. MC GOON, HAROLD T. MANKIN, and JOHN W. KIRKLIN: Results of open-heart operation for acquired aortic valve disease. J. thorac. cardiovasc. Surg. 45:47-66, 1963.

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Diagnostic and Therapeutic Blocks of Occipital Nerves for Occipital Headache

ROBERT R. JONES, M.D.

Rochester, Minnesota

The greater occipital nerves originate, essentially, from the second cervical nerves: The posterior divisions of the second cervical nerves pass backward between the atlas and the axis; they then pass between the inferior capitis oblique and the semispinalis capitis muscles; and, accompanied by the occipital arteries, they finally pierce the semispinalis capitis and trapezius muscles where they form the greater occipital nerves, which supply the skin of the scalp in the occipital area and communicate with the other nerves of the scalp.

Jackson[1] reviewed the anatomy of the cervical nerves in detail and stressed the significance of mechanical derangements of the cervical spine as related to them.

Diagnostic and therapeutic nerve blocks of the occipital nerves are easily accomplished, perhaps more easily than are such blocks of other nerves. However, the interpretation of the effects of the block is most difficult.

Usually patients referred for occipital block have a presumptive diagnosis of occipital headache or occipital neuralgia. Although there is a marked difference of opinion, the existence of such an entity has been affirmed by many authors: Overton[2] reviewed 186 cases of cervical root pain and noted that not only headache but also precordial pain, interscapular pain, and pain in the upper extremity could result from cervical nerve root irritation. Jones and Brown[3] observed that trauma may cause chronic head pain which results not from intracranial changes but from changes in the soft tissues of the head and neck. Jackson[4] noted that a migrainelike headache could result from irritation of the upper cervical nerves. Gunther and Kerr[5] indicated that a radicular type of pain resulted from arthritic changes. Involvement of the nerve roots was presumed to result from either meningeal reaction secondary to the arthritis or from pressure in the narrowed root canals.

When a headache is presumed to be of cervical root origin, the diagnosis is difficult to confirm. During physical examination, tenderness may be elicited over the occipital nerves, and, when the head is rotated, the patient frequently notes a grating sensation. Josey[6] indicated that roentgenographic examinations were diagnostic. He recommended lateral roentgenograms taken while the patient held his head in the erect position, in the position of extreme flexion, and in the position of extreme extension. Loss of the normal lordotic curvature of the cervical spine was presumed to be the most diagnostic roentgenographic sign.

Patients suspected of having a headache secondary to irritation of cervical nerve roots have a history as follows: 1. They are usually more than 40 years old. 2. Their headaches are intermittent but last for days or weeks. 3. Sitting in a fixed position, as in driving, reading, sewing, or typing, may precipitate the headache. 4. The headache is most prominent in the occipital area but may spread to other areas. 5. Patients usually

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have had one or more completely negative neurologic examinations.

The technique of the block is as follows: the patient is asked to lie down in the prone position, and a large pillow is placed under his chest. The occipital area of the scalp is checked for sensory changes; the area is then scrubbed, but not shaved, and a bactericidal solution is applied. A wheal is made in the skin 2½ cm. lateral to the occipital protuberance on the side where the headache is most severe. A 25-gauge needle is then inserted perpendicularly into the wheal until paresthesias are produced. As profound anesthesia is desirable, a concentrated anesthetic solution, such as 2 per cent lidocaine (Xylocaine) is recommended. Two to 5 cc. of the anesthetic solution is injected. When anesthesia is complete, the patient is turned to the supine position.

Patients respond to the effects of the block in various ways: Some are disturbed by the resulting anesthesia and say the numbness is worse than the headache; some experience relief of headache but no relief of pain in the neck; some obtain temporary relief of symptoms; and some have complete and permanent relief of symptoms.

Hartsock,[7] who also observed dramatic relief of symptoms, indicated that such results were psychologic in that the patient thought that he finally knew the exact cause of his headache.

In those instances where blocking the cervical nerves gives relief of head pain but not of neck pain, the posterior divisions of C_2 and C_3 are then blocked as they emerge from between the first and second and between the second and third cervical vertebrae. (C_3 is also blocked because a filament from its posterior division usually joins the greater occipital nerve on each side.) To do this, needles are inserted on the affected side and roentgenograms are made to verify their positions before the anesthetic solution is injected.

When temporary relief of symptoms follows a diagnostic occipital block, the block is repeated in an attempt to obtain more prolonged relief. Generally, in such circumstances, conservative measures also are recommended. The conservative measures found most useful are cervical traction, massage, heat, and mild analgesics.

Quite often the pain is very severe and will not respond to conservative therapy. Radical procedures, such as the injection of alcohol into the occipital nerves or surgical section of the nerves, may be indicated. In some instances, rhizotomy of the cervical nerves is considered.

Prior to the injection of alcohol, it is important to do a diagnostic block, for an alcohol block should not be done if the patient is disturbed by the numbness resulting from a diagnostic block. The patient should be informed that temporary discomfort will follow the injection of alcohol and that numbness will persist indefinitely.

A therapeutic alcohol block is accomplished in nearly the same manner as a diagnostic block. The difference is that the needle is left in place for approximately thirty minutes after the injection of lidocaine. Then a total of 0.5 to 1 cc. of absolute alcohol is injected in small increments.

In my practice, approximately 100 diagnostic and therapeutic nerve blocks are done each year. I think the procedure is useful, especially for those patients with no intracranial pathology but with persistent severe symptoms of headache.

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The Need for Regional Anesthesia Today

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One of the most difficult aspects of modern medical practice is to be constantly aware of the advances that are being made in all fields of scientific endeavor. Current developments and possible improvements in or additions to knowledge of the future require much consideration in every field, but I shall restrict myself to anesthesia and the problem of chronic debilitating pain.

Most observers would say, and perhaps correctly, that the current status of anesthesia is better than it has ever been. Nevertheless, constant study and vigilance are necessary to ensure that this statement remains true and particularly that it will be true tomorrow. It is from this point of view that I wish to speak to you about regional anesthesia, as it is now, as it was in the past, and as I think it might be in the future. I shall not present a technical paper, meaning that I shall not describe exactly how procedures involved in producing regional anesthesia are carried out. This point has been covered repeatedly by myself and others in the past, and hence it is not difficult to learn about the steps involved in regional methods of anesthesia.

Rather, I think it is important and preferable for us now to appraise the value of these procedures and to ensure, so far as we can, that the useful components of them remain available and are even improved for use in the future. I have employed regional anesthesia extensively and for a long time, and this experience has impressed upon me a respect for the many advantages of this form of anesthesia.

SELECTION OF PROPER METHOD IMPORTANT

I am quite aware of the advances made in general anesthesia and of the widespread use of several new general anesthetic agents such as methoxyflurane (Penthrane), halothane, and fluroxene (Fluoromar), as well as combinations of these agents.

Surely, it is of prime importance that anesthesia be safe from fire and explosions. In the case of general anesthesia this paramount objective has almost been reached, if indeed it has not been entirely attained. Yet there remain certain side effects of general ansthesia, as well as of regional anesthesia, formidable enough to warrant some consideration at this time. We know that when general anesthesia is employed, there is always the possibility that the patient may be hypersensitive to the drug used, so that at times an ordinary dose may be to the hypersensitive person as dangerous as an overdose would be to the patient of ordinary sensitivity. Similar untoward factors can complicate the use of regional anesthesia, that is, the patient may be hypersensitive to a drug or his condition may make him unsuitable for the method of anesthesia itself. In either case, whether general or regional anesthesia is contemplated, the anesthetic agent and the procedure must be adapted to the needs of the patient rather than that the patient be adapted, so to speak, to the anesthetic agent and the procedure. For this reason it is very important that both methods be readily available, since otherwise a choice of anesthetic agents would not be possible. Sometimes, of course, the anesthesia procedure most nearly ideal in a given case is at hand, but no one is available who is able to apply it and to maintain satisfactory and safe anesthesia with it.

REGIONAL ANESTHESIA IN DIAGNOSIS

I should like to call attention to a solution called PAB_2, which has been used with epinephrine to produce prolonged though temporary relief of certain types of pain.[1] Mention of this useful combination leads naturally to a discussion not only of the value of regional methods of anes-

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thesia for operations but also of the value of these measures in the diagnosis of pain pathways, particularly among patients who have chronic debilitating pain. Regional anesthetic procedures also may be helpful in the diagnosis of diseases of which pain is a symptom.

Some of the recent uses of PAB_2 solution have been dramatic. It should be useful not only in hospital practice but in office practice and even in the home itself, where so many patients who need help must remain. The fact that PAB_2 can be administered readily in a patient's home has impelled me to try to obtain a relaxing of present restrictions exerted by governmental agencies upon the use of certain drugs for oral administration. Some of these drugs can be sold for administration by injection, but I am hopeful that the limiting regulations can be overcome or changed so that it may become possible also to obtain them for oral use where this form of administration is feasible.

THOROUGH KNOWLEDGE OF AGENTS NECESSARY

I have mentioned the fact that in general practice it is important that there be a choice of anesthetic agents. Not only are patients very different from one another, but the pathologic processes they have usually are different. Hence, I emphasize that one must be concerned with the question of which anesthetic agent is most suitable for the patient at hand. It is important to know as much as possible about the drug which is to be used and how concentrated it is, so that safe dosage will not be exceeded. It is prudent to re-examine at times the manufacturer's pamphlets which are packed with the container of local anesthetic agent, so that any new information about use of the agent will be recognized.

PRECAUTIONS

It is important to record the concentration of the drug and the amount used, an action which can become of paramount concern in court. The size and the length of the needle employed should be recorded also. Precautions to avoid intravascular injection of the agent should be observed. Certain patients require special preparation for, and special care in, the use of any anesthetic agent, whether general or local. A major special consideration which has to do with safety for the patient is the question of how well he can cooperate with the surgeon and the anesthesiologist.

THE FEARFUL PATIENT

Fear is one of the emotional elements which must be assessed and assuaged. Has the patient been fearful for a short or a long time before the administration of an anesthetic agent? Fear that is present for only a short time may not be significant, since most people experience it; but if fear has been dominant for a long time, it is probable that the patient is not now in a satisfactory state to receive an anesthetic agent. When such a condition is apparent, the operation should be postponed, if possible, until the patient has been prepared with sedative agents and has gained some degree of respite from his fear.

HYPERTENSION INDUCED BY FEAR

A complication of acute fear may be an attack of hypertension. In my book, *Clinical Anesthesia*,[2] (1942) I wrote: "Occasionally one sees a patient who is hypertensive from fear. Hypertension from fear may be due to an oversecretion of epinephrine and may account for some of the occasional sudden fatal results that occur after anesthesia has been induced in cases in which the patients are so frightened that they insist before the operation that they are going to die. These patients should receive sedation the night before and the morning of operation and should be kept in a placid state until anesthesia can be induced."

To tolerate the stress of anesthesia, the patient needs all his normal defenses. In particular, the integrity of the glands of internal secretion must be complete, so that they will provide him with the products necessary to maintain his stamina and resistance. I try to avoid, and almost always succeed in doing so, institution of a procedure for a patient who maintains that he will not survive it. If such is the state of his sensorium, he probably will not.

CORTISONE AND MORPHINE

Most of us are by now familiar with the dangers threatening a patient who has been taking cortisone for a considerable period but who has ceased to use the drug. If, in such a state, he is to undergo anesthesia, he may not sustain such a massive stress unless he is prepared for it by the administration of cortisone, usually in a dose of 100 mg. for two or three days before the operation. It might also be decided that he is to receive perhaps 15 to 25 mg. of this drug for a day or two after the operation. In earlier times, before we knew as much as we know now about idiosyncrasies to drugs, some patients were very sensitive even to a hypodermic injection of morphine. It is plain now that these patients were unable to withstand the administration of an anesthetic agent without a bolstering action which we did not always have available to us.

These are two examples of situations which are very serious indeed.

PHYSICAL IDIOSYNCRASIES

A subject less serious, but one which it is important to recognize, concerns differentiation between those people who tolerate pain very well and those who do not. For instance, it is at once obvious to the observer that some people with varying degrees of deafness are not much disturbed by pain of low severity and extent. The factor of complexion has some relationship to tolerance of pain. It is known that redheaded people usually tolerate warm sunshine poorly and that applications of iodine to the skin cause them distress. They certainly do not withstand pain as well as blonde persons do, and a blonde person, in turn, does not withstand pain as a brunet person does, as a rule. Moreover, the circumstance of whether a person has been reared in a cold or a warm climate seems to be of some moment in tolerance of pain, and even nationality and vocation may be involved.

It is well to remember such considerations when the decision is being made as to what method of anesthesia will be used. I have noticed that if the patient is redheaded and is from a warm climate, it is well to administer extra sedation and to be prepared to administer more of the local anesthetic agent as the operation proceeds. If possible, the patient's mind should be occupied by conversation with some person who can give him attention. Sometimes soft music in the room helps. I have noted that there are persons who will not undergo local anesthesia knowingly; in such instances it may be advisable first to produce light general anesthesia and then to introduce the local anesthetic nique.

ANCILLARY ADVANTAGES OF LOCAL AND REGIONAL ANESTHESIA

Administration of a local anesthetic agent sometimes makes it possible to use very little general anesthesia. The general practitioner may not always have available the facilities required for the production of general anesthesia. Because this is true, I think it is important for him to learn as much as possible about local and regional anesthesia, so that he can produce such anesthesia when he is confronted with an operation which he can do if this type of anesthesia can be applied. Actually, most general practitioners have some knowledge of the usual methods of producing local anesthesia and, with practice, can become very skillful in the technique.

PRACTICAL USES OF PAB_2 SOLUTION

Infiltration anesthesia for the relief of pain has interested me very much for many years, as some of you may know. Earlier I mentioned the solution known by the acronym, PAB_2. This consists of 2 per cent procaine hydrochloride, 3 per cent ammonium sulfate, and 4 per cent benzyl alcohol. As a rule, the concentration of the latter two agents can be varied somewhat. This solution, mixed with epinephrine, usually is effective for relief of the type of pain I have in mind. Generally, I draw up into a 10-cc. syringe 0.25 cc. of a 1:1000 solution of epinephrine and then add 10 cc. of the PAB_2 solution. This mixture is then ready for use.

What I suggest is that this mixture be injected into a trigger area or a tender site which has been causing the patient distress. This area should be infiltrated with 10 cc. of this mixture. As a rule, the pain will be relieved immediately, and many times relief will last for hours or days. Such an injection may be repeated as often as necessary, say, twice within three days, again within a month and, perhaps, once in the next month. Then a considerable time may pass before the pain returns. These increased periods of remission of pain after the use of this solution interest me very much. Since I have not encountered any difficulty in use of the solution, I think that it is worthwhile to call attention to what it will do.

I do not now inject this solution intradermally, although I have done so in the past. The reason I avoid intradermal injection is that it causes some small change in coloration of the skin which persists temporarily. Hence, if it is judged that a wheal must be made in the skin before the needle is inserted, this can be done with a very small quantity of a plain local anesthetic agent.

Sometimes this solution has diagnostic importance. That is, if it is used to block a pain pathway and it is noticed that after this procedure relief of pain persists much longer than was true previously with an ordinary local anesthetic agent, with or without epinephrine, the evidence will be rather convincing that the correct pathway has been established.

However, I must warn that PAB_2 solution with epinephrine is not to be employed indiscriminately. Only very small total amounts of epinephrine should be used, and even then the solution should be administered chiefly for diagnostic purposes or to relieve pain for brief periods in the hope that prolonged remission may come about after such treatment. Moreover, I think this solution should not be used, for example, in caudal block anesthesia because of the danger that it may enter the cerebrospinal fluid and produce a prolonged disturbance of the nervous transmission of sensory and motor activity.

BLOCKING AND SECTIONING OF NERVES FOR PAINFUL HIPS

Patients who have painful hips are often encountered. In such instances I have used PAB_2 solution with epinephrine to block the femoral cutaneous nerves of the thigh, although it is true that a local anesthetic agent can be used for the same purpose. My technique is to inject the lateral femoral cutaneous nerve near the anterior aspect of the superior iliac spine until, on the lateral side of the thigh, I have produced anesthesia which ends abruptly about 4 in. above the knee. When this has been accomplished, I ask the patient to walk up a few steps. If he can do this exercise less painfully than before, I note the fact. I then block the anterior femoral cutaneous nerve until the strip of skin anesthesia extends down the medial portion of the thigh to a point above the knee. Now the patient is again asked to walk up steps. If the patient has obtained complete relief of pain, I record the fact. If he is not free of pain, I inject the posterior femoral cutaneous nerve. This nerve lies just superficial to the sciatic nerve. When anesthesia of the skin of the posterior surface of the thigh has been obtained to a point well above the knee, I again ask the patient to attempt to walk up a few steps bearing his weight on the particular foot involved. At this point, if I find that he is free of his pain, or almost so, I consider sectioning of these three nerves—the lateral femoral cutaneous, the anterior femoral cutaneous, and the posterior femoral cutaneous—or any one or two of them, accordingly as relief of pain is achieved by each procedure. Of course, care must be taken not to use large quantities of the local anesthetic agent in this maneuver because, if the anesthetic agent is absorbed into the bloodstream in considerable quantities, the patient probably will be free of pain over most of his body and results of the diagnostic study will be vitiated.

PUDENDAL NERVE BLOCK

A good illustration of the convenience and reliability of nerve block is vaginal delivery, in which pudendal nerve block is a very simple procedure to carry out and usually is very satisfactory.

SPINAL ANESTHESIA

For medicolegal reasons, spinal anesthesia has been falling into disuse. There is much good to be said for spinal anesthesia, but it must also be pointed out that there is a vast difference between simply using spinal anesthesia and achieving good spinal anesthesia. Techniques for the production of good spinal anesthesia are not very difficult to learn. I should say that any physician who can use spinal anesthesia in his practice should apply himself to acquiring a good technique and then using it. Despite what has appeared in the public print about spinal anesthesia and litigation because of it, patients usually can be brought to the point of asking for this type of anesthesia or at least consenting to use of the method if its value is explained to them. This is particularly true when abdominal cesarean section is to be done in a patient who has heard something about spinal anesthesia which alarms her. In such an instance, if the physician will reassure the patient confidently that he can carry out spinal anesthesia without unpleasant effects and that the procedure would be better for both mother and child than other forms of anesthesia, she very likely will ask for it.

It is true, of course, that the patient may refuse to accept spinal anesthesia. If she does, it is quite possible to infiltrate the line of the proposed incision in the abdominal wall and to expose the uterus under this type of anesthesia. The patient may complain of some degree of pain during the operation, but, on the other hand, anesthesia is being employed with considerable safety to both mother and child. If, after the baby has been delivered, the patient is tired and complains of discomfort, a general anesthetic agent may be administered if it is available.

REGIONAL ANESTHESIA PRESERVES RESPIRATION

One of the advantages of regional anesthesia, and even of low spinal anesthesia, is that very little inhibition of respiration occurs. What we must remember is that respiratory motion has to do not only with ventilation of the lungs but also with circulation of the blood. A major disadvantage of general anesthesia, particularly when it is combined with the use of muscle relaxants, is that the patient cannot always do his own breathing. Of course, if this respiratory deficiency prevails for a long time, the patient will have lost his first line of defense against anoxia.

The second line of defense is the heart, and if respiration is deficient, the heart must increase its output or stroke volume. Such an increase is a formidable stress; if it continues for a considerable period the heart may tire and stop.

Now, many a patient can be maintained by means of general anesthesia and a muscle relaxant and be entirely unable to breathe, but he can survive if the anesthesiologist alternately squeezes by hand, in rhythm, the breathing bag on the gas machine. Of course a respirator can be applied, and this is better than hand action on the bag. However, I believe that nothing can breathe for the patient better than he can do it himself.

THE LITTLE PUMP AND THE BIG PUMP

I maintain that the little pump (the heart) was placed inside of the big pump (the chest) for functional reasons. The heart is unable to exert negative pressure. In the chest, negative pressure is exerted by breathing, and the diaphragm creates positive pressure in the abdomen. This physiologic mechanism is no accident. It exists because it is needed vitally. For this reason I emphasize the point: "Let them breathe and let them live." The statement is valid, even if the patient is in an oxygen tent, because there is not much point in providing oxygen to the patient if he cannot breathe it. Someone should be able to see at all times that the patient is breathing; the patient should not be allowed to remain hidden inside the tent.

FILTRATION OF OXYGEN

I think it is of more than passing interest that recently it was shown by Mortensen and associates[3] that oxygen within the storage cylinder contains bacteria, just as ambient air does: "Standard bacteriologic sampling and culturing techniques have demonstrated conclusively that viable bacteria exist in oxygen used clinically. Bacteria cultured from medical oxygen supplies comprise the common airborne contaminants. An efficient, small, inexpensive, reliable sterilizing filter has been developed which can be inserted into the oxygen line and will effectively sterilize oxygen at flow rates up to 15 liters per min."

CHOICE OF LOCAL ANESTHETIC AGENTS

I shall not make any recommendations concerning local anesthetic agents. It is equitable to say that any anesthetic agent that has been placed on the market by a reputable pharmaceutical house has been tested carefully until it is known to be satisfactory. The practitioner who tries several such agents probably will soon find that he has a preference for one of them. But whatever the agent used, the physician must be sure that he administers it with the safeguards recommended by the manufacturer in his directions.

ADDITION OF EPINEPHRINE

The question of the use of epinephrine with a local anesthetic agent depends very much upon whether use of this vasopressor is contraindicated by the patient's physical condition.

CONTROL OF UNTOWARD REACTIONS

One of the early signs of an untoward reaction is shivering or twitching or even mild or violent convulsions. As a rule, these can be controlled by the intravenous use of barbiturates, such as thiopental sodium or pentobarbital sodium in small doses. The inherent danger in a convulsion is that the patient cannot breathe well. When this comes about, oxygen probably should be administered until he can breathe satisfactorily by himself. It is good practice to have some type of barbiturate readily at hand, even though it rarely may be needed.

I do not wish to stress unduly the untoward results which may follow the injection of a local anesthetic agent. Nevertheless, it is well to bear in mind the fact that all anesthetic agents must be given considerable careful study if they are to be used to best advantage. Most of them may be considered somewhat in the class of firearms: A little carelessness may result in someone's being hurt or even killed.

WHY THE PRACTITIONER ALSO MAY HAVE TO BE THE ANESTHESIOLOGIST

The advantages of regional and local methods of anesthesia of course parallel the skill with which they are applied. From the standpoint of the general practitioner, I believe it is important for him personally to use these methods from time to time so that he may retain his skill in applying them. Our population is steadily increasing; this means that there exists and probably will continue to exist a scarcity of personnel able to help the general practitioner with the problems of anesthesia. Therefore, the practitioner himself must be prepared to carry on his surgical efforts even though he may have to produce anesthesia himself.

SOURCES FOR READING

Time does not permit an exhaustive discussion of regional anesthesia, but I believe you should consider the many good results which can be achieved with these methods. A number of books on the subject are available. One is *Nerve Blocks: A Manual of Regional Anesthesia for Practitioners of Medicine,* by John Adriani, published by Charles C Thomas. Another, by Daniel Moore, of Seattle, is *Regional Block: A Handbook for Use in the Clinical Practice of Medicine and Surgery,* third edition, 1961, also published by Thomas. Still another, by John J. Bonica, of Seattle, is *Clinical Application of Diagnostic and*

Therapeutic Nerve Blocks, published by Thomas in 1959. Many of the standard books which cover most of the field of anesthesiology have chapters on regional and local anesthesia. My own book, entitled *Clinical Anesthesia: A Manual of Clinical Anesthesiology,* published by the W. B. Saunders Company in 1942, is now out of print, although it is often available. It has definite instructions on most of the blocks.

This paper was presented at the meeting of the American Academy of General Practice, Chicago, Illinois, April 1 to 4, 1963.

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Current Literature on Pain

ALTERATIONS IN RESPONSE TO SOMATIC PAIN ASSOCIATED WITH ANAESTHESIA. X: FURTHER STUDIES WITH INHALATION AGENTS, by J. W. DUNDEE, R. M. NICHOLL, and G. W. BLACK: Brit. J. Anaesth. 34:158-160, 1962.

In a recent publication from this department, Dundee and Moore (1960) reported that subanaesthetic concentrations of nitrous oxide, trichloroethylene, and diethyl ether had a demonstrable analgesic action, but this did not apply to halothane. . . . This work has since been extended to include methyl-n-propyl ether, cyclopropane, and the halothane-ether azeotropic mixture. . . . Except for cyclopropane, all studies were carried out on fit, unpremedicated medical students. Investigations with cyclopropane were limited to the authors and their colleagues because of the very high incidence of nausea which followed its administration. . . .

Diethyl and methyl-n-propyl ether, nitrous oxide, cyclopropane, and trichloroethylene all showed analgesic activity, but halothane and halothane-ether azeotrope did not. Nitrous oxide, in concentrations not exceeding 50 per cent, is considered to be the analgesic of choice when it is important that consciousness should not be impaired. It is suggested that the analgesic action of the inhalation agents may be related to the sympatho-adrenal response which they evoke.

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PATHOLOGY OF INTRATHECAL PHENOL INJECTION IN MAN, by BERRY, KENNETH and OLSZEWSKI, JERZY: Neurology 13:152-154, (Feb.) 1963.

In spite of increasingly frequent use of intrathecal injections of phenol for alleviation of pain or spasm, there are no reports in the literature describing the histologic lesions caused in man by this procedure. The rationale behind the treatment is the assumption that small nerve fibers are particularly vulnerable to phenol. This hypothesis has been supported by results of acute experiments in animals. . . . However, Baxter and Schacherl recently reported that in cats phenol damages large as well as small fibers. . . . We felt . . . that a brief report of observations on human material was warranted. . . .

Three cases of subarachnoid injection of phenol are reported. In 2 of these cases, there was severe degeneration of myelin affecting predominantly the outer zone of posterior roots with involvement of all types of fiber. The concept that phenol acts only on small nerve fibers is not supported by these observations. It is possible, however, that the large fibers may show a certain amount of preferential resistance to phenol.

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EPIDURAL ANESTHESIA FOR CESAREAN SECTION. A REPORT OF 800 CASES, by BODELL, BENSON, TISDALL, L. H., and ANSBORO, F. P.: Anesth. & Analg. 41:453-458 (July-Aug.) 1962.

In 1952 we published a report concerning our first 125 cases of cesarean section performed under epidural anesthesia. Our series now consists of 800 cases and serves as the basis for a continuing evaluation of epidural anesthesia in cesarean section as practiced at St. Catherine's Hospital, Brooklyn, New York. . . . The sine qua non for successful epidural block is a thorough familiarity with the anatomy of the spinal ligaments and the epidural space itself. . . .

We have not had one case of massive spinal anesthesia during this series of cesarean sections or in 6700 epidural blocks performed for general surgery. . . . The anesthetic method of choice for cesarean section is epidural block. Performed by properly trained and qualified anesthesiologists, the procedure can reduce the 'maternal mortality remainder,' so important to those of us engaged in the great crusade for the reduction of maternal mortality.

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RADIAL NERVE PALSY FROM INTRAMUSCULAR INJECTION, by CLINICAL ANESTHESIA CONFERENCE: New York State J. Med. 62:1674-1675, (May 15) 1962.

Anesthetists frequently prescribe and occasionally administer various medications intramuscularly. A site often utilized for the injection is the deltoid region. If the intramuscular injection is not placed carefully, radial nerve injury may result. . . .

A forty-seven-year-old male was admitted to the emergency room with compound fractures of both legs incurred in an automobile accident. . . . Because the patient was complaining of severe pain, 100 mg. of meperidine were administered intramuscularly in the left arm while he was in the emergency room.

In the operating room forty-five minutes later he was found to be apprehensive and in acute distress. An additional 50 mg. of meperidine hydrochloride and 0.4 mg. of atropine sulfate were administered intravenously. The anesthetic induction and maintenance for the open reduction and fixation of both legs was cyclopropane-oxygen in a closed-circle absorption system. One thousand cc. of whole blood were administered intravenously in the left arm to replace the 800 cc. of blood estimated to have been lost during surgery.

The patient awoke from the anesthetic promptly and immediately began to complain of weakness in the left hand. . . . The impression was that he had a left radial nerve palsy above the innervation of the brachio-radialis muscle. . . . Healing of the fractures and recovery of the nerve progressed satisfactorily, and the patient was discharged as recovered at the end of eight weeks. . . .

An examination of this patient revealed that the site of the injury must have been near the lateral intermuscular septum just above the innervation of the brachio-radialis muscle. This site is distal to the recommended site for intramuscular injection in the deltoid muscle. This injury probably was caused by the meperidine injection in the emergency room.

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NEEDLE NERVE STIMULATOR-LOCATOR: NERVE BLOCKS WITH A NEW INSTRUMENT FOR LOCATING NERVES, by GREENBLATT, G. M. and DENSON, J. S.: Anesth. & Analg. 41:599-602 (Sept.-Oct.) 1962.

Unsuccessful regional nerve blocks are most often due to variations in anatomical landmarks. Pearson and Sarnoff have located motor nerves by electrical stimulation with an insulated needle. The instruments they used were a heavy transformer, vacuum-tube stimulator and an electrophrenic stimulator. A small (4" x 3" x 1½") portable transistorized nerve stimulator has been constructed. . . . Its use in locating peripheral motor nerves has been documented clinically. This stimulator has been valuable in reducing the volume and dosage of local anesthetic agents, in blocking nerves difficult to locate, in teaching regional block technics, and in greatly increasing the percentage of successful blocks.

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MUSCLE PAINS FOLLOWING THE USE OF SUXAMETHONIUM IN CAESAREAN SECTION, by BRYSON, T. H. L. and ORMSTON, T. O. G.: Brit. J. Anaesth. 34:476-480 (July) 1962.

The operation performed on all cases was that of elective or emergency Caesarean section. All cases were premedicated with intramuscular atropine 0.65 mg. 30 minutes before the operation and anaesthesia was induced with thiopentone 150-200 mg. or methohexitone 60-80 mg. intravenously, followed in 10-15 seconds by suxamethonium chloride 50 mg. in 1 per cent solution. . . .

The average total dose of suxamethonium used was 340 mg. and the average duration of anaesthesia was 45 minutes. The total number of patients in the series is 130 of which 41 cases received an initial dose of gallamine, the other 89 receiving no non-depolarizing agent. . . . The commonest sites of muscle pain were the back, neck, arms, legs and chest in this order. The incidence of jaw and neck pains was maximal on the first postoperative day, that of shoulder and limb pain on the second, and that of chest and back pain on the second and third postoperative days. . . .

The incidence of severe post-suxamethonium pains after Caesarean section is 15.7 per cent. This is not inconsiderable but should not preclude the use of the valuable barbiturate, suxamethonium, nitrous oxide and oxygen sequence for this operation. It is thought that further efforts should be made to find a safe and reliable method for reducing these pains.

From LUNDY, J. S., and MC QUILLEN, F. A.: Anesthesia Abstracts. Minneapolis: Burgess Publishing Co., in press, vol. 60. Copyright by J. S. Lundy.

ALTERATIONS IN RESPONSE TO SOMATIC PAIN ASSOCIATED WITH ANAESTHESIA. XIII. THE 'LYTIC COCKTAIL', by NICHOLL, R. M., MOORE, JAMES and DUNDEE, J. W.: Brit. J. Anaesth. 34:717-720, (Oct.) 1962.

A study of the effects of individual phenothiazine derivatives on the response to somatic pain in man has demonstrated the marked antanalgesic action of promethazine . . . which is so great as to antagonize the analgesic action of pethidine. . . . Chlorpromazine was found to have a weak analgesic action but is not as potent in this respect as pethidine. . . . In view of these findings, and of the fact that a combination of pethidine, chlorpromazine and promethazine (the 'lytic cocktail') has been used extensively as a 'potentiating' mixture prior to general anaesthesia and for the relief of intractable pain . . . it was considered that a study of their combined effects would be of interest. . . .

All studies were made on healthy male subjects scheduled for repair of inguinal herniae. . . . Although the findings of this study were not very well defined, it would appear that the intravenous injection of the lytic cocktail caused an increased sensitivity to somatic pain followed by a period of analgesia, which in some instances was more prolonged than would have been expected from pethidine alone. Its antanalgesic action was also demonstrated by the lowering of readings which was observed throughout the period of continuous infusion of the mixture.

These results suggest that the immediate antanalgesic action of promethazine is more marked than the early analgesic of pethidine, but that the action of the opiate outlasts that of the phenothiazine derivative.

From LUNDY, J. S., and MC QUILLEN, F. A.: Anesthesia Abstracts. Minneapolis: Burgess Publishing Co., in press, vol. 60. Copyright by J. S. Lundy.

AN EVALUATION OF THE CHENG NEEDLE IN THE ADMINISTRATION OF 1002 SINGLE-DOSE LUMBAR EPIDURAL ANESTHETICS, by SHEEHAN, J. M., WRIGHT, I. V., and SHEPARD, B. M.: Anesth. & Analg. 41:552-556 (Sept.-Oct.) 1962.

In recent years the Anesthesia Service at the U. S. Naval Hospital, San Diego, has performed approximately 3500 spinal anesthetics a year, exclusive of routine obstetric cases. The greater patient acceptance of epidural block over spinal anesthesia, however, has led to an increasing preference for this technic, as indicated by our 1960 figures of approximately 2500 spinal anesthetics and 1500 epidural blocks. To obviate the usual disadvantages—inadvertent subarachnoid tap, difficulty in finding the space, and time loss, a modified method of administration was sought. The blunt-tipped needle, described by Cheng was tried in several hundred cases. Because no large series of cases had been reported to evaluate this type of needle, single-dose lumbar epidural blocks were analyzed over a 10-month period (1002 cases) and form the basis of this report. . . .

Experience with the Cheng needle technic in more than 1000 cases of epidural anesthesia has shown that this technic is both easy and rapid. If the test dose is omitted, this technic requires no more time and is no more difficult than spinal administration. We have found that the omission of the test dose is safe.

The major disadvantage is postoperative backache or soreness at the injection site. The high percentage of good patient acceptance of the technic has indicated that most patients do not consider this too important nor does it outweigh the disadvantages of other types of anesthesia.

From LUNDY, J. S., and MC QUILLEN, F. A.: Anesthesia Abstracts. Minneapolis: Burgess Publishing Co., in press, vol. 60. Copyright by J. S. Lundy.

PNEUMOTHORAX; ITS INCIDENCE FOLLOWING INTERCOSTAL NERVE BLOCK, by MOORE, D. C., and BRIDENBAUGH, L. D.: J.A.M.A. 182:1005-1008 (Dec. 8) 1962.

Intercostal nerve block is seldom used by most physicians because: (1) they are not familiar with its many uses, (2) they are not trained or skilled in performing this block, and (3) they have been misled to believe that following such a block the incidence of pneumothorax is high. . . .

In an earlier study, by the present authors, of 50,097 intercostal nerve blocks in 4,333 patients, only 4 pneumothoraces occurred (0.092%). This seems to contradict the misconception that the incidence of pneumothorax is high. However, since routine postoperative chest x-rays were not taken following the intercostal nerve blocks in that study, the possibility remained that 'silent' or asymptomatic pneumothoraces which were not noted might have occurred.

Therefore, the following questions arose. First, do silent pneumothoraces occur following intercostal nerve block? Second, if so, with what frequency do they occur when this block is performed by competent physicians? Third, are silent pneumothoraces from intercostal nerve blocks a danger to the patient? and, finally, should routine postoperative chest x-rays to determine the presence of a silent pneumothorax be taken following intercostal nerve block?

It was the purpose of this study to try to answer these questions and further evaluate the over-all incidence of pneumothorax as a sequela of intercostal nerve block. . . . Routine anteroposterior roentgenograms of the chest were taken preoperatively and on the second postoperative day in 200 surgical patients who received an intercostal nerve block as a step in the method of obtaining satisfactory surgical anesthesia. . . .

The incidence of silent pneumothorax was one in 235 blocks (0.42%). No symptomatic pneumothoraces occurred. Therefore, this most useful block can be and should be part of the resources of most physicians, to prevent and alleviate pain, but in particular the physician anesthetist.

From LUNDY, J. S., and MC QUILLEN, F. A.: Anesthesia Abstracts. Minneapolis: Burgess Publishing Co., in press, vol. 60. Copyright by J. S. Lundy.

Reuben H. Waldschmidt, M.D.

E. H. BOERTH, M.D.
Bismarck

When Dr. Reuben Herman Waldschmidt died on November 24, 1961, the Quain and Ramstad Clinic at Bismarck, North Dakota, lost the second of its senior physicians. Scarcely two weeks before, the clinic lost its senior physician, Dr. C. W. Schoregge, through death.

Dr. Waldschmidt joined the Quain and Ramstad Clinic on June 1, 1925, and became chairman of the clinic partnership on January 1, 1955. He resigned both his partnership and chairmanship six years later, although he continued to practice medicine and surgery and maintained an office at the clinic.

He was born at Fond du Lac, Wisconsin, on March 8, 1895, a son of Henry and Karragunda Waldschmidt. After receiving his elementary and secondary education at Fond du Lac, he attended Wartburg College in Waverly, Iowa, and Augustana College in Rock Island, Illinois, receiving his B.A. degree from the latter institution.

Dr. Waldschmidt served as a second lieutenant with a field artillery unit in World War I. Following the war, he enrolled at the University of Minnesota, where he received his B.A. and B.M. degrees in 1921 and the degree of doctor of medicine in 1923. He served his internship at a U.S. Public Health Hospital in Minneapolis for one year before coming to Bismarck for his preceptorship in surgery at the Bismarck Hospital. He joined the Quain and Ramstad Clinic staff in 1925 and had been on the professional staffs of the Bismarck and St. Alexius hospitals since that time.

Under the tutelage of Dr. E. P. Quain, one of the founders of the clinic, he became deft in surgical technic and in the handling of tissues. His training provided him with a depth and accuracy in evaluating surgical problems. Although he was terse, he had sympathy and understanding for those who sought his advice and counsel.

Dr. Waldschmidt was active for years in the North Dakota State Medical Association, having served on several of the association's committees. He participated in the House of Delegates and in 1947 was elected to the Council, serving as president of the Council in 1952 and 1953. He was president of the North Dakota State Medical Association in 1957. For several years he was a member of the editorial board of The Journal-Lancet.

During his professional career he was on the North Dakota Board of Regents of the American College of Surgeons. Dr. Waldschmidt was president of the Sixth District Medical Society, governor of the American College of Surgeons, and vice-president of the Mississippi Valley Medical Association.

His avocations were hunting and traveling. He was a member of the Masonic Lodge, Sojourners, Scottish Rite Bodies, and the American Legion.

E. H. BOERTH *is with the Quain and Ramstad Clinic, Bismarck.*

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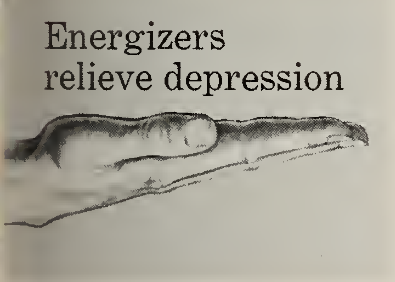

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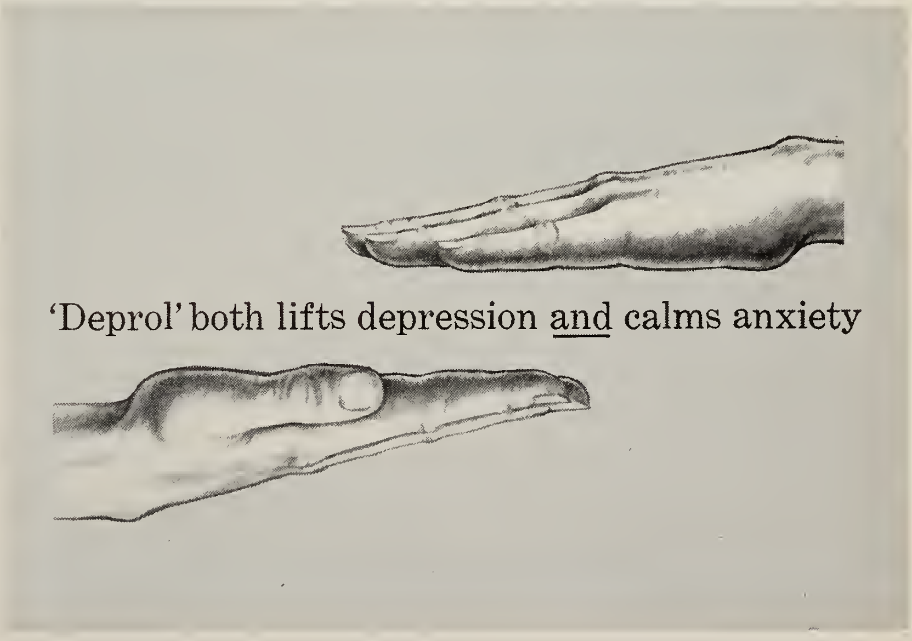

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Book Reviews . . .

The Past Is Not Past

EUGEN KAHN, M.D., *1962. Springfield, Illinois: Charles C Thomas. 66 pages. $3.75.*

This quite short book of 66 pages and 20 chapters is quite difficult to review. It is interesting and unusual. At times it is repetitive but apparently for purposes of emphasis and for summing up what has gone before. Since it is also listed as Publication No. 511, American Lecture Series, a Monograph in *American Lectures in Clinical Psychiatry*, edited by Howard P. Rome, M.D., one can perhaps assume that this represents a series of lectures which have been presented, although the reviewer could find no clue regarding this point.

If one is to give any summary and interpretation, it would be that the presentation seems to fit under the existentialistic views more than anywhere else. The use of the "Now here—then there" fits in with such writings. The discussions of time and space and the processes of exteriorizing and interiorizing further give this book a special formulation. Certain parts of the book are very clear and simply expressed. Other parts are much more obscure. It may be said that the author emphasizes that one's past consists of actual experiences but also depends upon the interpretations the individual gives to these experiences.

Kahn shows how, historically, our views with regard to famous figures are determined by the many usually conflicting reports available to us. Our own emotional attitudes usually make us accept the interpretation which is in agreement with these attitudes.

There is a most interesting discussion of Vincent van Gogh, bringing out the way in which various reports might affect one's judgment as to the sort of man van Gogh was. It is also pointed out that among patients with different types of mental disorders each tends to interpret the past and build it up in a manner determined by his own individual psychosis. There is also the idea that an individual changes his past experiences, "according to present and future needs."

There is much more interesting material and it is felt that this book will be enjoyed by all psychiatrists who read it.

KARL M. BOWMAN, M.D.
San Francisco

Listen to Leaders in Medicine

ALBERT LOVE *and* JAMES SAXON CHILDERS, *editors, 1963. Atlanta: Tupper and Love, Inc., 340 pages. $4.75.*

Here is a book which can be of interest to all physicians and especially to their sons who are thinking of going into medicine. Every one should start with the last article by Irvine H. Page. It is a masterpiece. It is one of the most delightful medical articles that we have seen. Excellent also is the article on internal medicine by Dwight Wilbur, who for years was on the staff of the Mayo Clinic and is now editor of the California State Medical Journal and a consultant to many institutions in California. Excellent is the interview with Karl Menninger who tells of the big changes that are taking place in psychiatry and of the need in psychiatry for able young men.

This book is a splendid choice for any young man who is thinking of going into medicine. Actually, the idea of the book came to the two editors when they happened to spend a Sunday afternoon with a group of college students who were wondering what they could do with their lives. Some said they wished they could talk with the "big men" in medicine so as to see what it is like and what are the opportunities for useful living. One feels grateful to all these able men who took time off out of their tremendously busy days to write these very helpful articles.

WALTER C. ALVAREZ, M.D.
Chicago

Principles of the Treatment of Trauma

W. H. KIRKALDY-WILLIS *and* A. MICHAEL WOOD, *editors, 1962. Baltimore: Williams & Wilkins Co. 244 pages. Illustrated. $8.75.*

The editors of this concise volume (244 pages) are drawing upon their experiences in Nairobi, Africa, in treating vast numbers of traumatized patients under somewhat less than ideal conditions. There are an additional half dozen contributors, mainly orthopedic surgeons, from Nairobi. Dr. Robert Roaf of Liverpool has contributed a chapter on spine injuries and Dr. Ralph Bowan, Houston, Texas, a chapter on fluid balance and therapy.

The first section of the book is devoted to "basic principles" including fluid balance and tissue repair. This is concise and most informative. This section alone makes the book worthwhile. There is also a short section on chemotherapy outlining the dosage, indications for use, and dangers of the more common antibiotics. Some disagreement might develop over the unqualified recommendation of antitoxin for gas gangrene.

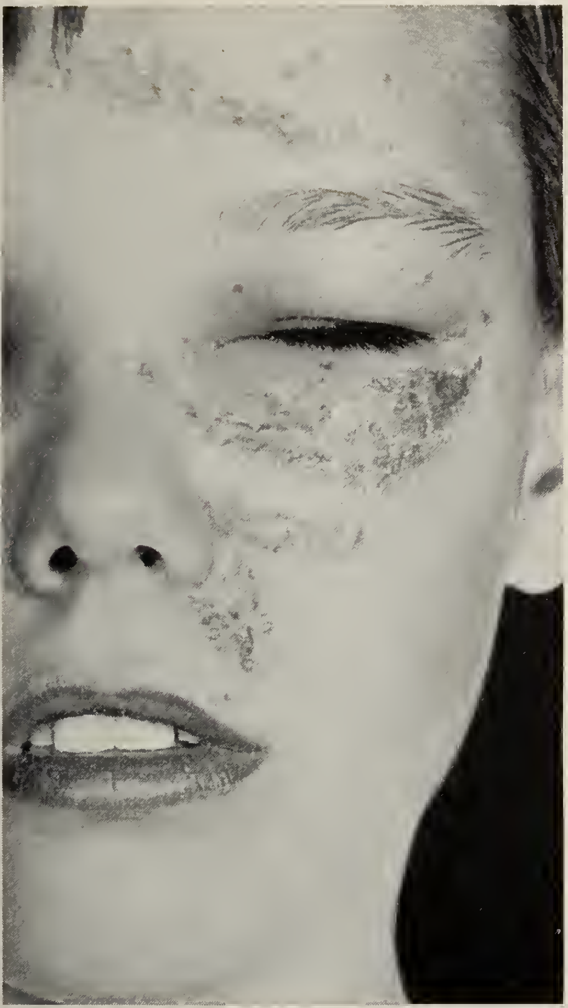
There is an excellent chapter on the treatment of burns. Skin grafting is discussed and the Humbly adjustable rollar knife is recommended. This instrument is used very little, if at all, in the United States.

The remainder of the book is concerned with soft tissue injuries and fractures of the extremities and spine. The treatment of specific fractures is briefly outlined representing the author's opinion rather exclusively. Orthopedic surgeons in the United States would disagree with many concepts expressed: for example, the removal of all immobilization from the fractured navicular after three months, regardless of healing, and the routine removal of casts from a Colles's fracture at four weeks.

The general trend of the book in outlining treatment of fractures is toward conservative treatment and reflects the British point of view. Bibliographies at the end of some of the chapters are all from Great Britain.

This book is to be highly recommended because of its excellent chapter on fluid balance, tissue repair, and the treatment of burns. The portion of the book dealing with fractures is less valuable but is certainly worth reading. The book is of particular value to the medical student and to the trainee in the fields of trauma.

JOHN H. MOE, M.D.
Minneapolis



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News Briefs . . .

North Dakota

DR. WILLIAM TURKULA has become associated in obstetrics and general practice with the Lake Region Clinic in Devils Lake. Dr. Turkula has practiced previously in St. Paul, Alberta, and for the past six years in Minnedosa, Manitoba. A native of Winnipeg, Manitoba, Dr. Turkula received his medical degree from the University of Manitoba Faculty of Medicine.

* * * *

DR. GERD FISCHER, neurosurgeon with the Quain and Ramstad Clinic in Bismarck, has been elected a fellow of the International College of Surgeons. Before joining the Clinic in July 1962, Dr. Fischer was in private practice in Winnipeg, Manitoba.

* * * *

DR. GEORGE SKELLY, a native of Winnipeg, Manitoba, is associated with Dr. R. L. Coultrip at McVille. During the past year, Dr. Skelly practiced in Cooperstown. He is a graduate of the University of Manitoba Faculty of Medicine, Winnipeg.

* * * *

DR. B. A. GIRARD, Mandan physician, has been appointed Custer District health officer. He fills the vacancy left by the death of Dr. C. C. Smith. Dr. Girard will be assisted by two deputy health officers, Dr. E. G. Vinje of Hazen and Dr. M. S. Jacobson of Elgin. The Custer Health District includes Mercer, Oliver, Grant, Sioux, and Morton counties.

* * * *

DR. JOHN A. SWENSON of Jamestown was the official representative of the North Dakota State Medical Association at the American Medical Association conference on legislative activities held in April in Chicago. Dr. Swenson is chairman of the North Dakota State Medical Association committee on public relations.

* * * *

DR. ARNOLD THOMPSON has begun practice in Turtle Lake. Dr. Thompson practiced in the Quain and Ramstad Clinic and Bismarck Hospital for fifteen years and was recently located in New Salem. He is a native of Mitchell, South Dakota.

Minnesota

DR. KARL HELWIG has discontinued his practice in Kerkhoven. Dr. Helwig plans to study pathology at St. Luke's Hospital in Duluth for the next four years. He has been practicing in Kerkhoven for the past seven years.

(Continued on page 22A)

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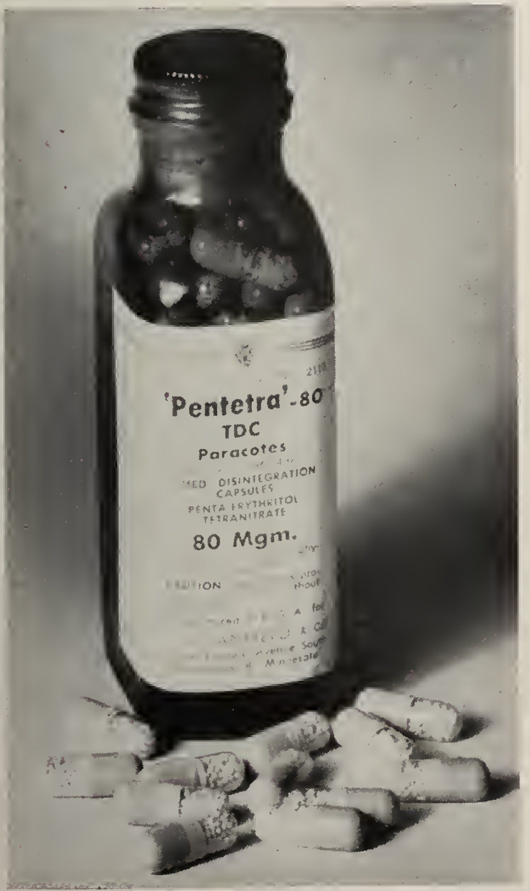

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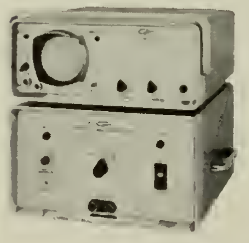

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NEWS BRIEFS

(Continued from page 20A)

DR. CAMILLO V. BOLOGNA has joined the staff of St. Ansgar Hospital in Moorhead as head of the department of pathology. Dr. Bologna served previously as pathologist at Divine Providence Hospital in Williamsport, Pennsylvania; Hibbing General Hospital; Chisholm Memorial Hospital; and Itasca Memorial Hospital in Grand Rapids. A native of New York, he is a graduate of State University of New York Downstate Medical Center, New York.

° ° ° °

DR. BRADFORD FRIEDRICH has become associated with the Medical Block Clinic in Red Wing. A native of Red Wing, Dr. Friedrich has practiced previously in Robbinsdale. He received his medical degree from the University of Minnesota Medical School in 1959 and interned at Highland-Alameda County Hospital in Oakland, California.

° ° ° °

DR. LOUIS S. GERBER, a native of St. Paul, has been appointed Chief of the Nursing Homes and Related Facilities Program of the Public Health Service Division of Chronic Diseases. Dr. Gerber received his medical degree from the University of Minnesota Medical School and practiced in North Dakota and New Mexico. He has been with PHS since 1957.

° ° ° °

RAY AMBERG, director of University Hospitals, Minneapolis, for the past twenty-eight years, has been awarded the Minnesota Medical Foundation's Distinguished Service Award for "exceptional devotion" to the hospital. He was cited by the University as a Distinguished Service Director. Amberg became assistant hospital manager and then University Hospitals manager in 1929, assistant director in 1932, and director in 1935.

° ° ° °

DR. JAMES MYHRE of Golden Valley has been elected president of the Minneapolis Academy of Medicine with Dr. John K. Grotting, vice-president, and Dr. William E. Price, Jr., secretary.

° ° ° °

DR. ROBERT L. STURGES is chief of staff of Fairview Hospital, Minneapolis, succeeding Dr. Dale H. Correa. Other new officers are Drs. George R. Martin, chief of staff elect; John H. Glaeser, secretary; and Donald Amatuzio, treasurer. Drs. Lester W. Carlander and Harry B. Hall are members of the hospital executive committee.

° ° ° °

DR. THOMAS HEGSTAD will join Drs. Homer and Harold Basinger in practice on July 1, in Windom. Dr. Hegstad is a graduate of the University of Minnesota Medical School and is completing internship at St. Mary's Hospital in Minneapolis. He is a native of Slayton.

° ° ° °

DR. JAMES BARR left his practice in Elmore in April after accepting a position with the government in Washington, D. C. Dr. Barr practiced in Elmore for eight years. He is a graduate of the University of Minnesota Medical School.

° ° ° °

DR. HADDON M. CARRYER, head of a Section of Medicine at the Mayo Clinic, Rochester, received a distinguished service award from his alma mater, Drake University, at the Founder's Day convocation in May. Dr. Carryer was graduated from Drake in 1935 with a bachelor of arts degree. He received his medical degree from Northwestern University Medical School in 1939 and came to the Mayo Foundation as a fellow in medicine in 1940. Dr. Carryer was appointed to the Clinic staff in 1943 and became head of a Section of Medicine in 1959.

* * *

SEVEN INTERNATIONALLY RECOGNIZED AUTHORITIES in various fields will participate in the symposium of the Mayo Centennial in Rochester on September 16, 17, and 18, 1964. The Mayo Centennial will honor the approximate hundredth anniversary of the births of Dr. William J. Mayo and Dr. Charles H. Mayo and the beginning of the fiftieth year of the Mayo Foundation. The symposium theme is "Mirror to Man." The participants will discuss activities and aspirations and possible objectives of man in the contemporary world. The seven participants will be:

DR. LOREN C. EISELY, anthropologist, author of *The Immense Journey* and *The Firmament of Time,* former provost of the University of Pennsylvania and currently professor of the history and philosophy of science at the University of Pennsylvania.

DR. PETER BRIAN MEDAWAR, zoologist and experimental biologist, former Jodrell professor of zoology at the University of London and corecipient of the Nobel Prize in medicine and physiology in 1960 for his work on acquired immunologic tolerance in grafting of tissues.

DR. EDWARD TELLER, nuclear physicist, author of *Our Nuclear Future,* director of research concerning planning and prediction function of the atomic and hydrogen bombs, former director of the Lawrence Radiation Laboratory and currently professor-at-large of physics at the University of California.

DR. RACHEL L. CARSON, author of *The Sea Around Us* and *Silent Spring* and zoologist and ecologist for many years at the University of Maryland and in the United States Fish and Wildlife Service.

C. A. DOXIADIS, civic planner and architect, designer in charge of civic planning for Philadelphia.

GENERAL LAURIS NORSTAD, supreme Allied commander in Europe from 1956 to 1962, a native of Minnesota, currently president of the North Atlantic Treaty Organization.

DR. ARTHUR LARSON, authority in jurisprudence and international law, special assistant and special consultant to the President of the United States during 1957 and 1958 and currently professor of law and director of the World Rule of Law Center at Duke University.

Moderator for the symposium will be Dr. Laurence M. Gould, president emeritus of Carleton College. Dr. O. Meredith Wilson, president of the University of Minnesota, will also participate in some proceedings of the symposium.

The emblem of the Mayo Centennial has been completed and is now in use. The purpose of the emblem is to honor the Mayo brothers, to call attention to the fiftieth year of the Mayo Foundation, and to symbolize

(Continued on page 24A)

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NEWS BRIEFS

(Continued from page 23A)

the Mayo Clinic. Incorporated into the seal are the three prime activities of the Clinic and Foundation—practice, education, and research. Gerald Hazzard of St. Paul designed the seal.

South Dakota

DR. J. C. SMILEY of Deadwood has been elected a fellow of the International College of Surgeons. A native of Belle Fourche, Dr. Smiley is a graduate of Rush Medical College, Chicago. He began practice in Deadwood about thirty years ago and is president of the staff of St. Joseph's Hospital.

Deaths . . .

DR. HARRY A. MILLER, 77, formerly of Fairmont, Minnesota, died April 19 in Brownsville, Texas. Dr. Miller was associated for a time in practice with Dr. V. H. Gardner, Sr., and Dr. H. G. Blanchard in the Fairmont Hospital and Clinic, now Fairmont Community Hospital. He had practiced in Minnesota and Texas for 56 years.

° ° ° °

DR. ROYAL ROUNCE MOSES, 55, of Kenyon, Minnesota, died April 6 in Faribault. Dr. Moses had practiced in Kenyon since 1935. He was a graduate of the University of Minnesota Medical School.

° ° ° °

DR. VICTOR C. THOMPSON, 78, physician at Marine-on-St. Croix, Minnesota, for more than forty-five years, died April 29 in Stillwater. A native of Preston, Minnesota, Dr. Thompson received his medical degree from the University of Minnesota Medical School in 1912.

° ° ° °

DR. RAYMOND P. SULLIVAN, 81, a fellow in the Mayo Clinic, Rochester, in 1909, died April 21 in New York City. Dr. Sullivan served a year in general surgery at the Clinic under the guidance of Dr. William Mayo. He later was a wartime colleague of the Mayo brothers in the Office of the Surgeon General of the U. S. Army during World War I. After 1910, Dr. Sullivan practiced in New York City where he was director of surgery at St. Vincent's Hospital.

° ° ° °

DR. JOHN W. RAATTAMA, 51, physician in Nashwauk and Keewatin, Minnesota, died May 5 in Hibbing. Dr. Raattama was chief of staff at Hibbing General Hospital in 1960. A native of Nashwauk, he was a graduate of the University of Minnesota Medical School.

° ° ° °

DR. PERCY T. WATSON, 82, former official of the Minnesota Department of Health, died April 21 in Miami, Florida. From 1909 to 1934, he was a medical missionary in China.

° ° ° °

DR. O. MORTON ROAN, 51, physician in Lamberton, Minnesota, from 1948 to 1958, died on April 4 in Brentwood, New York. Dr. Roan was a native of Minneapolis and a graduate of the University of Minnesota Medical School. He had a fellowship in psychiatry at Pilgrim State Hospital, West Brentwood, New York.

COMING *in* September

Articles and features to be found in the next issue of THE JOURNAL-LANCET

The September issue of THE JOURNAL-LANCET will be devoted to a special group of articles on diabetes mellitus. Guest editor for this issue is E. A. Haunz, professor and chairman, Department of Medicine, University of North Dakota School of Medicine, and endocrinologist, Grand Forks Clinic, Grand Forks, North Dakota.

Dr. Haunz holds that it is axiomatic that all medical science exists solely for the amelioration or cure of man's ills. He writes in his foreword to the issue that in this era of too few doctors it is imperative that the busy practitioner be constantly informed on the current status of diagnosis and treatment of the commoner diseases and that he possess at least a working knowledge of the rarer diseases.

It is for this reason that the symposium was conceived, organized, and integrated. Not only is diabetes one of the commonest afflictions of man, but the vast majority of diabetic patients are under the care of a generalist; hence Joslin's statement that "from the cradle to the grave, the diabetic belongs to the general practitioner."

Dr. Haunz states that since no physician, regardless of his specialty, can evade contact with diabetic patients, a basic familiarity with this disease is requisite for *all* who practice medicine. The newer concepts of the cause, pathological physiology, and therapy of diabetes are somewhat revolutionary, and it is incumbent upon the general physician to keep abreast of these advances if his patient is to be served in full measure. On this basis, the symposium presents nationally prominent authorities in the field of diabetes mellitus in a sincere effort to fulfill this need in presenting concise, lucid, and basic expositions on the current status of this all-important malady. Each clinician is uniquely qualified to present the subject matter about which he writes, and all participants draw from a vast clinical experience.

The subjects and authors of papers to appear in this issue are:

- **Diabetes Detection in General Practice,** by Thomas P. Sharkey, Dayton, Ohio, president, American Diabetes Association.
- **Oral Hypoglycemic Agents,** by Rachmiel Levine, New York, president-elect, American Diabetes Association, co-authored by Morton Smith.
- **The Mode of Action of Insulin,** by T. S. Danowski, Pittsburgh, first vice-president, American Diabetes Association.
- **Insulin in the Treatment of Diabetes,** by Alexander Marble, Boston, past president, American Diabetes Association.
- **Pregnancy Complicating Diabetes,** by Blair Holcomb, Portland, Oregon, past president, American Diabetes Association, co-authored by John W. Partridge.
- **Juvenile Diabetes,** by Priscilla White, Boston.
- **The Acute Treatment of Diabetic Acidosis,** by Leo Krall, Boston.

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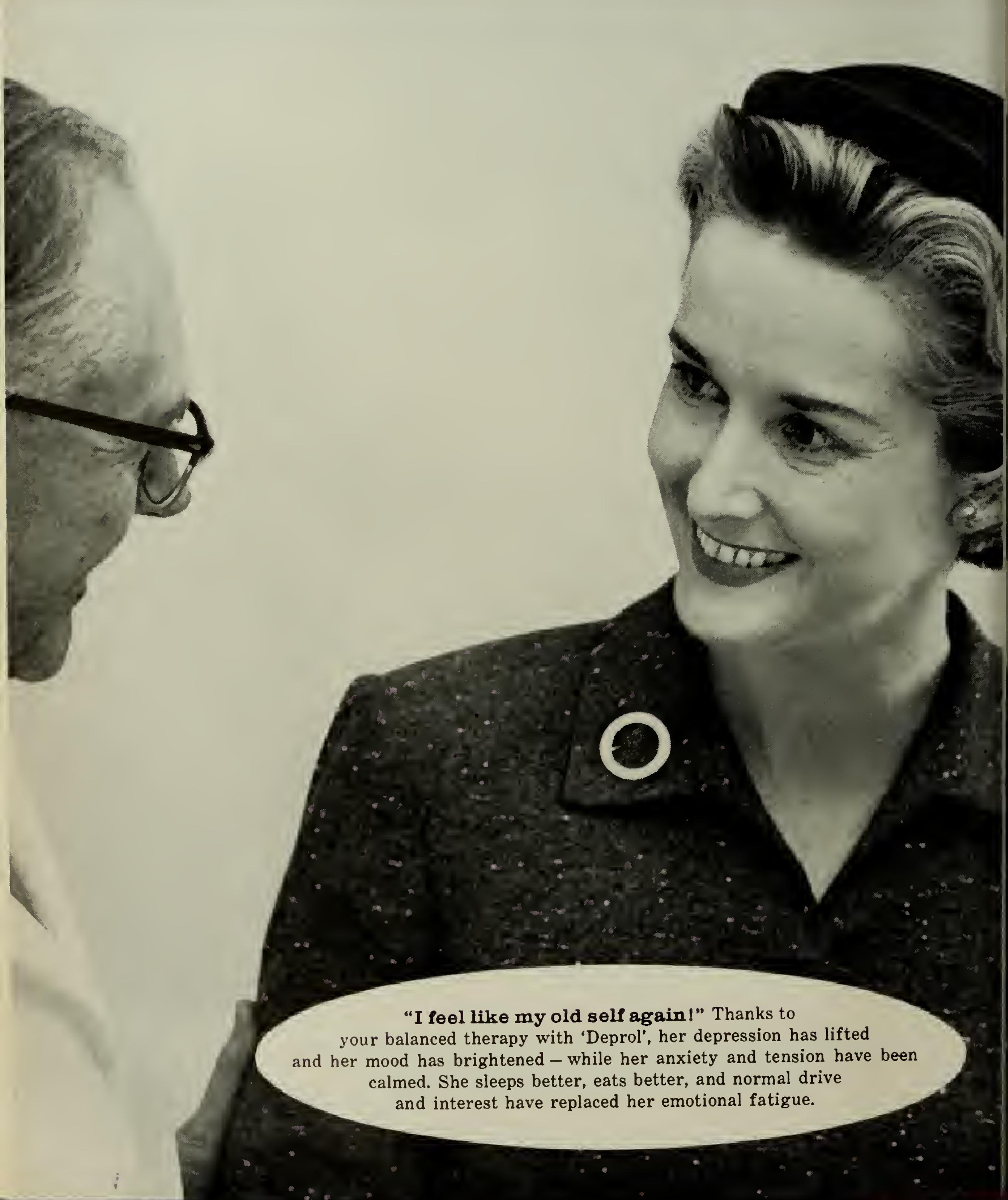

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The first part of a series of papers from the staff of the Quain & Ramstad Clinic, Bismarck, North Dakota, and from the papers presented at the Annual Fall Clinical Conference, sponsored by the Quain & Ramstad Clinic, the Bismarck Medical Foundation, and the North Dakota chapter of the American Academy of General Practice, appears in this issue.

These papers have been assembled by Dr. Lloyd S. Ralston and myself.

It is hoped that in the future we will be able to submit for publication in THE JOURNAL-LANCET *most of the papers presented each year at the Annual Fall Clinical Conference held in Bismarck.*

H. MILTON BERG, M.D.

Treatment of Psoriasis

HOWARD R. GRAY, M.D.

Bismarck

PSORIASIS is a relatively common skin disease. The treatment of the patient with psoriasis is a problem frequently encountered not only by dermatologists but also by physicians engaged in the general practice of medicine. Most physicians would agree that treating this disease can be a perplexing problem.

Although considerable research involving psoriasis has been done, it is true that we have no cure available for this disease. However, we do have something of value to offer the patient with psoriasis and, if the effective agents available are properly utilized, we can often achieve good results in managing these patients.

During recent years some new methods for treating psoriasis have become available. These newer forms of psoriatic therapy, together with some of the older treatment methods, will be reviewed.

INTRALESIONAL INJECTION

Local injection of corticosteroids is often of great value in the treatment of localized lesions of psoriasis. Patients with a few isolated patches are ideal candidates for this form of therapy although patients with more extensive involvement may have lesions on exposed areas, such as the arms or hands, that may be successfully managed by this method.

Triamcinolone diacetate or acetonide suspension in a concentration of 5 to 25 mg. per milliliter is ordinarily used. The triamcinolone may be mixed with isotonic saline or a local anesthetic such as lidocaine (Xylocaine) to obtain the desired concentration. The material may be injected using a small-bore needle (25 gauge) with minimal discomfort. The triamcinolone suspension is injected immediately beneath the skin.

Treated lesions ordinarily respond within one or two weeks and remain clear from two months to a year or longer. Some discoloration at the site of the psoriatic involvement may remain and occasionally a slight depression at the treated site may occur. This is usually temporary and disappears after a few months. If no more than 25 mg. of triamcinolone is injected at weekly intervals, systemic effects are minimal. If the treatment is continued over a long period of time some adrenal suppression would possibly occur.

HOWARD R. GRAY *is with the Department of Dermatology, Quain and Ramstad Clinic, Bismarck.*

TOPICAL CORTICOSTEROID THERAPY

Facial and intertriginous lesions of psoriasis frequently respond to topical corticosteroids. When used in conjunction with the occlusive dressing technic utilizing a thin plastic film, such as Saran wrap, other lesions of psoriasis will often improve.[1] Large areas of the body may be treated in this manner. Thin plastic gloves may be used to treat hand lesions with this technic. Various corticosteroids have been used. Triamcinolone, flurandrenolone and fluocinolone have proved to be among the more effective corticosteroids—when used with the occlusive dressing technic.

The occlusive plastic film causes maceration and sweat retention, thus promoting absorption of the corticosteroid. Occasionally a miliaria-like eruption is seen and, less often, furunculosis may be a complication.[2]

TOPICAL THERAPY

A number of topical preparations have been helpful in the management of patients with psoriasis. A topical medication may only prove effective for varying periods of time, making an occasional change in medication necessary. Ordinarily it is advisable to begin therapy with less potent medications, proceeding to more potent preparations as required. If a change in medication is made in patients with extensive psoriasis, the new medication should be applied to a limited area for about forty-eight hours to determine the possibility of an adverse reaction.

When selecting a topical medication, consideration must be given not only to the site of psoriatic involvement but also to the characteristics of the lesions present. In addition to selecting appropriate active ingredients, one must also consider the base containing the active component. Ordinarily a greasy ointment base will produce better results on lesions with a great deal of scaling but may be too messy to be used on the scalp. A water-washable base, such as hydrophilic ointment, may be more acceptable for treatment of the scalp. Intertriginous areas will often tolerate a cream or lotion better than a greasy ointment.

Five per cent ammoniated mercury ointment may be of value in treating psoriasis. The preparation is mild and, in the absence of sensitivity to mercury, a reaction is unlikely. Ammoniated mercury ointment is often the best medication with which to institute therapy.[3]

Various tar preparations have been found useful in the treatment of psoriasis. Liquor carbonis detergens, a coal tar solution; oil of cade; and crude coal tar are preparations often found to be beneficial. Tar, particularly crude coal tar, has the disadvantages of its staining qualities and odor, and patient acceptance is often poor. A tar, such as 5 per cent liquor carbonis detergens, may be compounded with ammoniated mercury ointment or may prove useful alone in a petrolatum base. Since tar preparations occasionally cause folliculitis, 3 per cent iodochlorhydroxyquinoline (Vioform) may be incorporated into the preparation with advantage. Tar preparations, such as Alma-tar, Balnetar, Zetar, and liquor carbonis detergens, may be added to the patient's bath.

In the presence of scaling, a keratolytic agent, such as 3 per cent salicylic acid, may be used in combination with ammoniated mercury or a tar preparation. Dihydroxyanthranol and chrysarobin are potent antipsoriatic agents but can cause irritation. These preparations should be started in a concentration of no greater than 0.1 to 0.25 per cent.[4] The concentration may be gradually increased. Dihydroxyanthranol and chrysarobin should not be used about the eyes since they may cause conjunctival irritation.

ULTRAVIOLET LIGHT THERAPY

Ultraviolet light therapy is often beneficial in the treatment of psoriasis, particularly when used in conjunction with topical tar preparations. The combination of crude coal tar and ultraviolet light was first recommended by Gockerman.[5] An ointment consisting of 3 to 5 per cent crude coal tar in petrolatum is applied. The tar is removed each morning with olive oil or mineral oil leaving a thin covering film. Ultraviolet light treatments are then given, gradually increasing the dosage. Following the exposure to ultraviolet light, the patient bathes. A thick coat of the tar ointment is applied after the bath and again before retiring. The amount of ultraviolet light should be calculated to produce a mild erythema and to avoid a more severe reaction.

IRRADIATION THERAPY

Superficial x-ray therapy will ordinarily produce temporary clearing of psoriatic lesions. Because of the benign nature of the disease and the possibility of late sequelae from excessive x-ray exposure, this form of therapy has lost much of its popularity.

Grenz ray (soft, poorly penetrating x-ray) therapy has become more popular in recent years since this type of therapy will produce results comparable with superficial x-ray and has the advantage of fewer late sequelae.[6]

SYSTEMIC CORTICOSTEROID THERAPY

Triamcinolone has proved to be the most effective corticosteroid used in the systemic therapy of psoriasis.[4] Systemic triamcinolone will produce clearing of psoriatic lesions although the clearing may be only temporary even if the medication is continued. An exacerbation of the psoriasis usually occurs when the systemic corticosteroids are discontinued, even if the dosage is reduced gradually. Systemic corticosteroids should not be used in the management of the ordinary case of psoriasis and should be used only in carefully selected patients. Systemic triamcinolone may prove to be of value in the management of the severe psoriatic patient who develops a generalized exfoliative erythroderma.

ANTIMETABOLITE THERAPY

In recent years 4-aminopteroyl-glutamic acid (Aminopterin) and 4-aminomethyl-pteroylglutamic acid (Amethopterin) have been found useful in the treatment of psoriasis. When the antimetabolites are used in conjunction with topical therapy, a patient previously unresponsive to topical therapy alone may then respond. These medications are usually given daily for seven days, then omitted for seven days; should the white blood count and platelet count remain normal and no signs of toxicity appear, the course is repeated.[4] Pregnancy, old age, and exfoliative erythroderma are considered to be contraindications.

In view of their potential toxicity, antimetabolites should be used to treat psoriasis only in carefully selected patients.

In reviewing psoriatic treatment it is well to mention the adverse effects of the antimalarial drugs in patients with psoriasis. Chloroquine and quinacrine dihydrochloride (Atabrine) frequently cause a severe exfoliative dermatitis after several weeks and are best avoided when treating patients with psoriasis.

SUMMARY

Both new and old methods of psoriatic therapy have been reviewed. These include intralesional injection, topical and systemic corticosteroids, older conventional topical preparations, ultraviolet light, irradiation, and antimetabolites.

Although no cure for psoriasis exists, many beneficial therapeutic agents are available. Proper use of the available agents will usually result in benefit to the patient.

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A GASTRIC DIVERTICULUM is an indication for surgical attention when significant gastric symptoms cannot be explained by any other lesion. Immediate excision is necessary for complicating hemorrhage or perforation. Predominant symptom patterns of diverticula are: (1) an ulcer-type syndrome apparently related to acid-pepsin erosion of diverticular mucosa, or (2) gnawing, aching, and cramping apparently caused by mechanical distention of the sac. Roentgenographic or gastroscopic demonstration of a pouch usually is necessary for correct diagnosis. Diverticula of the cardia are easily recognized, but the less frequent pyloric lesions may closely imitate gastric ulcers, excavating tumors of the smooth muscle, postoperative deformities, and ectopic pancreas. More than one diverticulum in a patient is rare. Of 25 patients with diverticula of the cardia, 15 had excellent results from excision according to follow-up studies ranging from three weeks to three years. Transient improvement was noted in 2 and no improvement in 5. Pyloric diverticulectomy relieved 1 of 4 patients.

RICHARD L. BIGG and EDWARD S. JUDD: Gastric diverticula. Amer. J. Surg. 105:239-244, 1963.

Quain and Ramstad Clinic Series

Some Basic Considerations About Water and Salt

LLOYD S. RALSTON, M.D.
Bismarck

THE FOLLOWING INFORMATION I consider basic to the clinician's understanding of the physiology and anatomy of water and salt. The material, though simple, bears repetition for at least two reasons. First, it is easily forgotten and therefore must be reviewed from time to time. Second, it is surprising how often the data were never really grasped by the clinician in the first place. In my opinion, understanding the material to be presented is necessary before intelligent fluid therapy may be exhibited; with this understanding emerges not only more effective therapy but enjoyment and satisfaction in its application.

I can make no claim for originality of thought or presentation. The data are so fundamental that proper acknowledgment is close to impossible. This merely demonstrates the debt we owe to teachers, clinicians, basic scientists, and others who are thoughtful enough to present their studies for the edification of all who take the time to read and think.

WATER

From the philosophic viewpoint one may regard his fellow man as being composed of variable constituents based on whatever bias personality may seem to indicate. Scientifically we must accept the fact that he is largely water. For the average man this is about 60 per cent of body weight. Table 1 shows the distribution of this water within the body. There are basically 3 compartments containing the body water. (Throughout, one must understand that use of the word "compartment" involves a somewhat fictional representation.) The intracellular compartment accounts for 40 per cent and the extracellular, for 20 per cent. The extracellular compartment is further divided into intercellular, valued at 15 per cent, and plasma, accounting for the final 5 per cent of total body water in terms of total body weight. The remainder of the body weight is the solid compartment, made up of protein, carbohydrate, fat, and minerals. Water as such is freely movable and is probably being constantly interchanged between compartments at all times. But, at any point in time, the volume of the spaces so designated seems to be quite constant.

Perhaps we could use some of the figures above in a more familiar and meaningful way as a means of illustration.

For example:

1 kg. = 2.2 lb.
70-kg. man = 154 lb.

What does the average 70-kg. man's water profile look like? First, he contains 60 per cent water.

60% of a 70-kg. man = 42 kg. of water

Since 1 liter weighs 1 kg., or 2.2 lb., this is the same as stating that our man contains 42 liters of water. One liter is 1,000 cc. A somewhat more familiar term is the quart (946 cc.), so we can say our hypothetical man contains about 42 liters, or 42 qt. of water. The distribution of this water in his various compartments is easily ascertained by simple arithmetic. We learned earlier that 40 per cent of body weight is intracellular water, therefore:

40 per cent of 70 kg. = 28 liters intracellular H_2O,
or, 28 qt. (plus) is water found within his cells.

How much is extracellular water? Earlier we

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TABLE 1

COMPOSITION OF THE HUMAN BODY IN TERMS OF LIQUID AND SOLIDS

Total body weight (TBWt)			= 100%
A. Total body water (as per cent of TBWt)			= 60%
1. Intracellular water		40%	
2. Extracellular water			
a. Intercellular	= 15%)	20%	
b. Plasma	= 5%)		
B. Solids			= 40%
Protein			
Carbohydrate			
Fat			
Minerals			

TABLE 2

DEMONSTRATION OF BODY WATER IN COMPARTMENTS UTILIZING FAMILIAR TERMS AND ARITHMETIC

1 kg.	=	2.2 lb.
70-kg. man	=	154 lb.
60% of 70 kg.	=	42 kg. water
1 liter	=	1 kg.
42 kg. water	=	42 liters water
1 liter	=	1,000 cc.
1 qt.	=	946 cc.
40% of 70 kg.	=	28 liters intracellular water
20% of 70 kg.	=	14 liters extracellular water
15% of 70 kg.	=	10.5 liters interstitial water
5% of 70 kg.	=	3.5 liters plasma

learned this figure to be 20 per cent of body weight, hence:

20 per cent of 70 kg. = 14 liters extracellular H_2O

To fractionate, we further apply the percentages; for example, interstitial (or intercellular) water equals 15 per cent of total body water, or:

15 per cent of 70 kg. = 10.5 liters interstitial water,

and for plasma (water):

5 per cent of 70 kg. = 3.5 liters plasma water

Table 2 summarizes the above information.

How is body water measured? There are several methods. The first might be called the direct method and proceeds as follows: The subject is weighed, sacrificed, chopped up, desiccated suitably, and reweighed. The difference between the initial and the final "dry" weight is the total body water (TBW). While this method may in some cases have a certain appeal, as with most attractive procedures, it has its drawbacks. It is cumbersome, only one determination is possible and, since the subject is disposed of, you cannot apply your newly found knowledge. (Besides, it's illegal.) Other methods must, therefore, be sought. For clinical purposes the dye dilution principle has been found to be a simple and easily applied method. While it sounds imposing and formidable, the basis of the dye dilution principle is quite simple. For example, if one were to select two beakers of equal size, fill one with water and half fill the other, then place a drop of coloring matter in each, he would find the half-filled beaker to be twice as dense in color as the full one. Stated more formally, the degree of dilution varies with the volume. The greater the amount of fluid, the more the dilution. From this information a simple formula can be obtained:

$$\text{Volume of space} = \frac{\text{Amount of coloring matter (dye) administered}}{\text{Concentration of dye in the space}}$$

Therefore, if one knows exactly how much he put in, allows time for mixing, and is then able to measure the final concentration of what he put in, substitution on the formula will give him his answer—the volume of the space he wanted to measure. This is the dye dilution principle.

To measure total body water or any of its divisions, one must have a suitable dye or indicator. The substance must fulfill certain characteristics as noted in table 3.

For total body water, deuterium oxide (heavy water) is quite suitable. Other useful substances are urea, antipyrene, bromide, and triturated water. To measure water in other compartments, certain refinements are necessary. For example, to measure plasma volume, Evans blue dye is used because it is largely retained within the plasma compartment. The radiologists and specialists in nuclear medicine are now providing radioactive materials which can be used with a high degree of accuracy.

SALT

In contrast to the great volume of water within the human body there is only a pinch of salt. But what a vital pinch this is! The very process of life itself depends upon certain ions such as Na^+, K^+, Ca^{++}, Mg^{++} and the negative counterparts, Cl^-, $SO_4^=$, $PO_4^=$, and HCO_2^-.

It would be well perhaps to review the definition of a few terms. What is an ion? The word comes from the Greek, meaning to wander, and is defined as a charged atom or radical. The ion

TABLE 3

DESIRABLE QUALITIES FOR AN INDICATOR IN DYE DILUTION STUDIES

1. Nontoxic
2. Freely soluble
3. Quickly diffusible
4. Not lost from the space
5. Easily measured

may be a cation (+) carrying a positive charge and so named because it is attracted to the cathode, or negative pole, of a battery. Alternately the ion may be an anion (−) carrying a negative charge and is so called because it is attracted to the anode, or positive pole, of a battery. The ions are then negatively or positively charged particles wandering about in an aqueous solution.

What is an electrolyte? An electrolyte is any compound whose aqueous solution conducts an electric current.

What is a milliequivalent (mEq.)? Why did this concept come into being and prove so useful clinically? For this simple reason: It means little physiologically or chemically to express mineral concentration in the body in terms of weight or milligrams per cent. It is somewhat like taking two men whose bodily weight is the same but whose physical strength is vastly different and calling them equal in terms of capacity to perform. Obviously another method of comparison is necessary. For somewhat similar reasons, the milliequivalent has come into wide clinical usefulness. The milliequivalent is technically set forth in the formula:

$$\frac{\text{mg. per cent}}{\text{Atomic weight}} \times \text{valence} \times 10 = \text{mEq. per liter}$$

You can forget this formula and remember only that the milliequivalent is a measure or statement of chemical activity. It gives a common denominator of activity such as that a milliequivalent of any substance has exactly the same chemical activity as a milliequivalent of any other.

A further example of the usefulness of the milliequivalent may be shown by dissecting sodium chloride (NaCl) a bit and placing just below the symbols the atomic weight of each substance.

$$\begin{array}{c} Na^{+} + Cl^{-} = NaCl \\ 23 + 35 = 58 \end{array}$$

Roughly, in terms of weight, this indicates that any unit of NaCl would be about 40 per cent Na and 60 per cent chloride, or, stated another way, 0.4 Na and 0.6 Cl. So we have a situation in which a smaller weight of Na is exactly matching a larger weight of chloride. The chemical activity, therefore, must be identical even though the weights differ rather markedly. This is where the milliequivalent as an expression of value becomes so useful. For, in truth, 1 gram of NaCl, though differing in the weight of its respective elements as shown, is composed of 17 mEq. Na and 17 mEq. Cl. How did we arrive at the 17 mEq. figure for each? Reference is made to the formula for determining the milliequivalent:

$$\frac{\text{mg. per cent}}{\text{Atomic weight}} \times \text{valence} \times 10 = \text{mEq. per liter}$$

If one were to place 1 gm. of NaCl in a liter of water, he would in fact have used 400 mg. Na and 600 mg. of Cl. The atomic weight of these elements being 23 and 35, respectively, substitution on the formula gives the answer.

$$\frac{\text{400 mg. Na.}}{23} \times 1 = 17 \text{ mEq. per liter Na}$$

and

$$\frac{\text{600 mg. Cl}}{35} \times 1 = 17 \text{ mEq. per liter Cl}$$

The factor of 10 is not necessary because the NaCl was already placed in a liter of water. If the milligram per cent is used, this merely means that 40 mg. was placed in each 100 cc. of water, and multiplying by 10 then gives the value for 1 liter. May I emphasize that the milliequivalent is a statement of chemical activity, such as that any electrolyte can be stated in terms of equal activity with that of any other.

ELECTROLYTES

We will now consider the electrolytes in their natural habitat, the various body spaces, in more detail. Table 4 lists extracellular electrolytes (cations) and gives an average value in milliequivalents for each. It is seen that Na^{+}, K^{+}, Ca^{++}, and Mg^{++} are the cations of extracellular fluid. Sodium, with its concentration of 142 mEq. per liter, accounts for more than 90 per cent of the total extracellular cations. This, plus the fact that sodium either passes with difficulty across the cellular membrane or is subject to "pumping out" from within the cell, makes it a most potent force

TABLE 4

CATIONS OF EXTRACELLULAR FLUID

Sodium (Na)	142 mEq. per liter
Potassium (K)	4-5 mEq. per liter
Calcium (Ca)	4.5-5 mEq. per liter
Magnesium (Mg)	3 mEq. per liter

TABLE 5

ANIONS OF EXTRACELLULAR FLUID

Bicarbonate (HCO_3^-)	27 mEq. per liter
Chloride (Cl^-)	103 mEq. per liter
Sulfates ($SO_4^=$)	2 mEq. per liter
Phosphates ($HPO_4^=$)	2 mEq. per liter
Organic Acids	8 mEq. per liter
Protein	12 mEq. per liter

TABLE 6

CATIONS OF INTRACELLULAR FLUID

Potassium (K^+)	150 mEq. per liter
Sodium (Na^+)	12 mEq. per liter
Magnesium (Mg^{++})	28 mEq. per liter

TABLE 7

ANIONS OF INTRACELLULAR FLUID

Phospate ($HPO_4^=$)	100^+ mEq. per liter
Chloride (Cl^-)	10 mEq. per liter
Sulfate ($SO_4^=$)	10 mEq. per liter
Protein	70 mEq. per liter

in controlling distribution of body water. Sodium then, acts as a sort of deterrent to water entering cells and profoundly affects the conservation and elimination of water. The other cations, potassium, calcium, and magnesium, normally have little effect on water balance, but one should not infer from this that they have little physiologic importance.

The anions of extracellular fluid are listed in table 5 together with their approximate milliequivalent value. Chloride (103 mEq. per liter) and bicarbonate (27 mEq. per liter) are seen to predominate. In fact, the combined concentration of these two anions normally is only about 12 mEq. short of the value for the predominate cation, sodium. The remaining anions balancing the total cation are sulfates, phosphates, organic acids, and protein. It should be noted that the number of cations always balances the number of anions. This is true regardless of disease or derangement. Another way of stating this is to observe that the body adjusts itself to comply with the laws of chemistry.

Table 6 gives a representation of the intracellular cations and table 7, the intracellular anions. A glance at these tables reveals several differences in ionic environment inside, as compared with outside, the cell. One notes that the value for total milliequivalents varies, being about 200 mEq. per liter intracellularly and approximately 160 mEq. per liter extracellularly. The sodium and potassium ratios are reversed. Whereas extracellular potassium is 4 to 5 mEq. per liter, it rises to 150 mEq. per liter inside the cell. The sodium value for extracellular fluid is about 142 mEq. per liter while, intracellularly, this falls to about 12 mEq. per liter. A very striking difference is noted in magnesium concentration. Extracellular values are in the range of 3 mEq. per liter while inside the cell the value is approximately 28 mEq. per liter. No calcium is found inside the cell. The intracellular anion column (table 7) shows again an interesting reversal of values. The phosphate is tremendously elevated (100-plus mEq. per liter), but, considering the role of phosphates in energy release, this is hardly surprising. Protein concentration is considerably higher inside the cell, again to be expected, since this is essentially the "stuff of life." Not shown in the tables is the small amount of carbonic acid (H_2CO_3) dissociated to $H^+HCO_3^-$ in the value of about 1.35 mEq. per liter and present equally both intra- and extracellularly.

ACID-BASE BALANCE

Probably no discussion of water and salt can be considered reasonably complete without some attention to acid-base balance. The normal pH (hydrogen ion concentration) of serum ranges from pH 7.35 to 7.45, or a variation of 0.1 pH unit. The maintenance of pH within such narrow limits is indeed remarkable when one considers the tremendous variety of substances gaining access to and egress from the blood stream. Even more impressive is the narrow range of pH which permits continued life. A lower level of pH 7 and upper level of pH 7.8 are about the limits compatible with continued life. A bit of confusion has crept into clinical literature concerning the terminology of acid and base. This stems from the clinician's practice of referring to cation (+) as base and anion (−) as acid. Chemically an acid is a donor of hydrogen ions, and a base is an acceptor of hydrogen ions. For example, the clinician refers to Na^+ as "base," yet the substance cannot accept H^+ ions. Similarly, Cl^- is regarded as an acid but has no H^+ to donate. Cl^- can, however, accept H^+ ions and chemically is regarded as a base. The convention originally suggested by Bronsted and Lowry has begun to replace the confusing terminology noted above. The central point in this scheme of acid-base balance is the H^+ ion. An acid then is any molecule or ion capable of giving up hydrogen ion to another substance. In similar fashion a base may be defined as any molecule or ion capable of accepting the hydrogen ion or donating a hydroxyl (OH^-) group. Since the clinician is becoming increasingly dependent upon the chemist and the basic scientist for advances within the clinical field, it is incumbent upon him to understand this simple change in manner of expression which corrects a rather fundamental error.

BUFFERS

How is the body able to maintain pH, within this 0.1-pH unit associated with health, in the face of constant and unceasing challenge? The answer to this remarkable maintenance of acid-base balance is found, for the most part, within the buffer system. So-called "buffering" refers to the mechanism whereby the body fluid is maintained at a pH compatible with life in the face of addition or subtraction of acid or base. Four mechanisms are concerned with this maintenance of homeostasis:

1. Chemical buffering with which we will be mostly concerned
2. Biologic buffering which lags from two to four hours behind chemical buffering in the extracellular fluid and consists mostly of ionic shifts into the cell where, perhaps, chemical buffering then takes place
3. Respiratory buffering
4. Renal buffering.

The last two are methods whereby the excess acid or base is eliminated from the body, or conserved for the body, after number 1 and, later, number 2 have nullified the immediate threat to life.

Space and, perhaps, capability do not permit much further consideration of the last 3 mechanisms. They are also, in reality, extensions of the basic chemical buffering with which we are primarily concerned.

The chemical buffer "systems" are defined as the combination of a weak acid (poorly dissociated) and one of its salts. The chief buffer in the human body (there are others having similar action) is the carbonic acid (H_2CO_3) and bicarbonate (HCO_3^-) system.

$$\frac{HCO_3^-}{H_2CO_3}$$

How does this combination do its job? If an acid (by definition, a substance capable of donating H^+ ions) is added, the H^+ ions are immediately taken up by the bicarbonate, and carbonic acid (H_2CO_3) results.

$$HCO_3^- + H^+ \rightarrow H_2CO_3$$

Carbonic acid H_2CO_3 is a weak (poorly dissociated) acid, so the body has converted the strong challenge of a strong acid (H^+ ions) into the weaker challenge of a weak acid.

On the other hand, if base (by definition, a substance capable of accepting H^+ ions or donating OH^- radicals) is added, what happens? The donated OH^- radical (ion) is neutralized by the carbonic acid to form water and bicarbonate, a weak base.

$$H_2CO_3 + OH^- \rightarrow HCO_3^- + H_2O$$

The body has converted the threat of a strong base into the lesser threat of a weak base.

This rather simple system isn't very impressive in vitro, but in the human body it is remarkably efficient. The human organism has been given a ratio of 20 parts bicarbonate (HCO_3^-) to 1 part carbonic acid H_2CO_3. This yields a pH of 7.4.

$$\frac{(HCO_3^-)}{(H_2CO_3)} = \frac{20}{1} = 7.4\ (\mathrm{pH})$$

Presumably the body has taken the bicarbonate and carbonic acid as well as the ratio because it has ready access to carbon dioxide (CO_2) and water (H_2O). These two substances can readily form carbonic acid and the building blocks for this buffer system. But this is not the only reason, and this is where buffer systems 3 and 4 (noted above) enter the picture. If, for instance, bicarbonate was for some reason decreased, the 20:1 ratio would be disturbed and pH would fall. The lung (No. 3) comes to the rescue, steps up ventilation, blows off CO_2, and lowers the value for H_2CO_3, thus maintaining the 20:1 ratio and the integrity of the pH. If, for another reason, carbonic acid (H_2CO_3) begins to rise, then the kidney (No. 4) begins to conserve HCO_3^- and the ratio of 20:1 is maintained and, with it, the pH is held to normal levels. One should emphasize that it is not exact amounts of bicarbonate and carbonic acid that are necessary to maintain pH but only that all-important 20:1 ratio. When the absolute amounts are altered but the 20:1 ratio is maintained, this is called compensated acidosis or alkalosis, as the case may be.

SUMMARY

Presented is a simplified and elementary version of some aspects of water, salt, and acid-base balance. My thanks are due to many authors and teachers whose publications and presentations have formed the basis for my own knowledge of the subject and from whom I have undoubtedly freely borrowed. Any errors of interpretation or of fact are my own. It is hoped that this communication will stimulate interest and further reading in the sometimes forgotten, but fascinating, physiology and anatomy of fluid therapy.

Symptomatic Epilepsy

(Due to Adams-Stokes Syndrome)

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EPILEPSY may result from primary intracranial pathology or be secondary to pathology outside the nervous system. An unusual case of this secondary type of epilepsy is presented. In this patient, an Adams-Stokes syndrome was produced specifically by the act of defecation, and symptomatic of this Adams-Stokes syndrome was the production of unconsciousness with clonic movements of the limbs. The need for careful search for the etiology in any patient presenting with the symptom of epilepsy is underlined by this case which presented an interesting and provocative diagnostic problem.

CASE REPORT

This 80-year-old female was in good health up to two months before her admission to hospital. During this two-month period, the patient had developed fainting attacks in association with the act of defecation. She was admitted to hospital for investigation of this complaint. An electrocardiogram made about 3 months before her admission to hospital was reported as "Q2-3 pattern with notching of QRS waves in AVL, otherwise normal."

The general physical examination revealed a systolic blood pressure of 148 and a diastolic of 90. There was a blowing systolic murmur heard over the precordium. The lungs and abdomen were normal. The extremities were normal. On neurologic examination there was some slowing of the cardiac rate when the carotid sinuses were compressed but no symptoms were noted in connection with this. The cranial nerves were normal. The deep reflexes were active and equal bilaterally. The abdominal reflexes were absent. The toe signs were negative. Results of the motor and co-ordination examinations were negative. The vibration sense was absent in the lower extremities in keeping with the patient's age. The remainder of the sensory examination was negative.

Routine blood and urine examinations, blood urea nitrogen, fasting blood sugar, blood calcium, and roentgenograms of the skull were normal. Two electroencephalograms were within normal limits for the patient's age. An effort was then made to constipate the patient and when this had been done, the patient had a repeat electroencephalogram made. During the electroencephalogram, she was encouraged to defecate and, coincident with the commencement of defecation, seizure discharges were recorded in the electroencephalogram. The patient became unconscious and clonic movements of the extremities developed. Following the regaining of consciousness, she complained of some precordial discomfort and an electrocardiogram was ordered. While the electrocardiogram was being made, the patient again defecated and, during this act, she once more became unconscious and clonic movements of the extremities developed. The electrocardiogram was continued throughout this episode and was reported as follows: "There are numerable episodes of partial AV block of varying duration. The longest, in lead 2, where 11 consecutive P waves are not conducted, amounted to a duration of this episode of approximately six seconds. Such a prolonged episode of ventricular standstill might be expected to produce symptoms of cerebral ischemia. The heart is in intermediate to semivertical position. Notched R wave in AVL shows some irregularity of ventricular conduction. S-T depression in leads 1, 2, 3, aVF, and V4 to V6 is abnormal, indicating myocardial involvement not necessarily due to organic involvement but compatible with left ventricular ischemia of a mild degree. The S-T depression may also be, in part, due to the fast heart rate. Abnormal electrocardiogram." (See figure 1.)

Subsequently, 4 serial electrocardiograms were obtained during the remaining fourteen days of the patient's hospitalization and these were reported as follows:

1. "Compared with the last electrocardiograms the heart rate is slower and the episodes of par-

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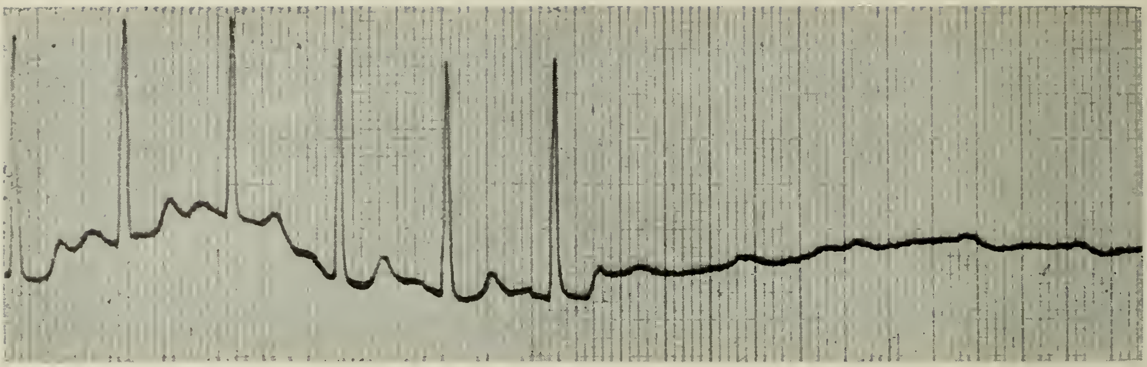

Figure 1

tial AV block have disappeared. The S-T segment depression is less pronounced in leads 1, 2, 3, aVF, and V4 to V6 and now has approximately borderline significance. It might be compatible with early left ventricular strain but is not yet definitely diagnostic. The changes since the last tracing are in the direction of improvement."

2. "Notching of the P wave in lead 2 shows some irregularity of auricular conduction. Notching of the QRS complex in aVL and V2 shows focal ventricular conduction defect which was present also in the last electrocardiogram. The S-T segment is more depressed than in the last tracing. In leads 1, 2, 3, aVF, and V4 to V6 the change is in the direction of deterioration, indicating nonspecific myocardial involvement compatible with left ventricular ischemia. Abnormal electrocardiogram."

3. "Sinus tachycardia is present at the rate of 100. The tracing is otherwise normal. The notching of the P wave previously mentioned is also present here. There is no evidence of the present tracing of heart block."

4. "There are no essential changes since the last electrocardiogram of August 25, 1954. The notching of the P wave is still present and the same as in the previous electrocardiograms, indicating some disturbance of auricular conduction which has little or no clinical significance. There is no evidence of ventricular myocardial involvement."

All medications directed toward preventing the occurrence of convulsive episodes in association with defecation proved to be of no avail. The patient received, in therapeutic doses, Mebaroin, ephedrine, atropine, Adrenalin, barium chloride, tincture of Belladonna, and phenobarbital. Although various combinations of these medications were tried they did not materially influence her "defecatory" epilepsy. At the time of the patient's discharge from hospital, there was essentially no change in her clinical status.

About two months after her discharge from hospital, a coronary infarction developed and the patient died. Before her demise she had had two outpatient electrocardiograms made: one three weeks after her discharge from hospital, which was reported as "borderline electrocardiogram on basis of depressed S-T segment in many leads. No significant changes since last electrocardiogram," and one four days later, which showed "Q2-3 pattern—otherwise normal electrocardiogram."

DISCUSSION

Any patient presenting with the symptom of epilepsy deserves a comprehensive investigation to determine whether the epilepsy is primary and arising from disturbance which is primary within the nervous system or secondary and due to conditions whose primary pathology is outside the nervous system and which secondarily affect the nervous system. This interesting patient presented a difficult diagnostic problem. In the interseizure period, the electrocardiograms and electroencephalograms gave no hint as to the final diagnosis of the Adams-Stokes syndrome which was finally established. The cause of the seizures in this patient was secondary to the cerebral ischemia produced by the Adams-Stokes syndrome.

CONCLUSIONS

The case of a patient with Adams-Stokes syndrome, who presented with the symptoms of unconsciousness and clonic movements of the extremities during the act of defecation, is described.

Prostatitis

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Clinically, patients with prostatitis can be classified as acute or chronic. The terms "congestive," "stromal infiltration," "granulomatous prostatitis," and others will be ignored; acute prostatitis will be considered first.

ACUTE PROSTATITIS

Acute prostatitis is clearly caused by bacterial invasion of the prostate. The organisms involved vary, the commonest being Escherichia coli and Staphylococcus aureus. They enter the prostate either through embolic deposition from the blood stream or by direct extension of infection from the posterior urethra. This is now most commonly secondary to chronic urethritis and is frequently associated with urethral manipulation, such as that from an indwelling catheter.

The entity of acute prostatitis is less prevalent since the advent of antibacterial drugs, particularly in regard to gonorrheal prostatitis.

The symptoms and signs of acute prostatitis are those of infection. Chills, fever, or pain in the abdomen, perineum, or rectum may occur. There may be an associated urethritis or urethral discharge or both. Often, discharge of the products of infection into the urethra is noted, causing cloudy, purulent urine. Urination is frequent, in small amounts, and usually painful. Voiding may become difficult, and often there is complete retention of urine. Rectal examination will disclose a somewhat enlarged, acutely tender prostate. If microscopic abscesses have coalesced, digital examination may reveal a firm, bulging mass. If drainage through the urethra has begun, the abscessed area may be soft. There actually may be a depression in the surface contour where the abscess cavity is located.

Acute prostatitis can be complicated by (1) prostatic abscess, (2) urinary retention, (3) epididymitis, and (4) bacteremia. The treatment consists of good supportive therapy, bed rest, adequate diet, and appropriate antibiotic therapy. The complications must be treated as they occur. Prostatic abscesses usually drain spontaneously through the urethra. Operative drainage, through either urethra or perineum, occasionally is necessary. Urinary retention can be treated with a small urethral catheter. In the face of severe urethritis, suprapubic cystotomy may be the appropriate method of urinary drainage. Epididymitis will usually respond to conservative management. Occasionally this will require surgical treatment. Manipulation of the urethra and prostatic massage should be avoided during the acute process, except for diagnostic purposes, in order to minimize the complications.

CHRONIC PROSTATITIS

Chronic prostatitis is a clinical syndrome comprised of (1) many symptoms, (2) minimal physical findings, (3) usually normal urine, and (4) variable findings on rectal examination of the prostate.

The cause of chronic prostatitis is unknown. Many bacteria have been implicated, and bacteria are frequently cultured from the prostatic fluid of these patients. Since a direct causal relationship has not been established, it may well be that they are essentially nonpathogenic.

The symptoms ascribed to this entity, somewhat in the order of frequency, are as follows: The patients complain of urethral discharge, which is seldom demonstrable at the time of the examination but is more commonly noted upon arising in the morning. They complain of difficulty in voiding, frequency, dribbling of urine, and painful urination. The pain may radiate to the tip of the penis, to the perineum, or to the scrotum. They have symptoms referable to other

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parts of the body, for example, low back pain and groin pain radiating to the genitalia. The patients' histories and physical examinations may elicit other inflammatory illnesses such as arthritis and iritis. There are sexual symptoms of an inadequacy of one sort or another. They may complain of general symptoms, such as loss of weight and appetite and nervousness, among others.

The urine is usually normal, although some shreds may be noted, particularly in the first portion voided. Prostatic examination may reveal a large, boggy prostate. It is sometimes normal to the examining finger. There may be some areas of nodularity, particularly in the upper portions of the gland. The prostate is not particularly tender, and the patient will submit quite readily to prostatic massage. The secretion following massage is greater in volume (from 1 to 5 cc.) than from the average patient. Microscopic examination of the prostatic fluid will frequently reveal numerous pus cells per high-power field.

Chronic prostatitis is related to several situations which should be borne in mind while treating these unfortunate people. First, those who are sexually inadequate and constitutionally asthenic will complain oftener and consult their physicians more frequently. Second, this syndrome is related to benign prostatic hypertrophy and other obstructive diseases of the posterior urethra and bladder neck. This should be borne in mind while treating these patients so that they can be given the benefit of the treatment of obstructive bladder neck disease. Third, chronic prostatitis is related to other inflammatory diseases, such as arthritis and iritis. The prostate has long been considered a focus of infection and, in fact, a causative factor in these other entities. Its relationship to these conditions is still not understood.

After obtaining a thorough history, treatment of chronic prostatitis should consist of a general physical examination, careful examination of the genitalia and prostate, and reassurance. The patient should be assured that he does not have a serious disease and that it is not venereal in nature. This is especially important because, in much of Western culture, it has been impressed upon the individual that venereal disease is a tragic thing. This early training makes a special impression on sexually and psychically inadequate persons. A sense of well-being is frequently attained by occasional, gentle prostatic massage. Antibiotics have little effect, except from a placebo standpoint.

BALANCED GENERAL anesthesia allows unhurried delivery in both emergency and elective repeat cesarean sections with few fetal or maternal complications. In emergency procedures, atropine usually is the only premedication, but in scheduled operations, an additional 200 to 500 mg. of ethchlorvynol is given at bedtime and occasionally two hours before operation. Induction of anesthesia is achieved by a single slow intravenous injection of 200 to 400 mg. of a 2.5% solution of thiopental sodium. Next about 40 mg. of an 0.2% solution of succinylcholine chloride is given while controlled ventilation is maintained by 100% oxygen. After muscle relaxation, a cuffed endotracheal tube is inserted and anesthesia is sustained with a 6:2 ratio of nitrous oxide and oxygen in a semiclosed system with carbon dioxide absorption. A minimal intravenous drip of succinylcholine chloride is continued. To induce retrograde amnesia, a few cubic centimeters of thiopental are given after the umbilical cord is clamped. After delivery, anesthesia is continued with the primary agents until the operation is completed. Balanced general anesthesia was used in 112 cesarean sections, 50 scheduled and 62 performed because of complications. No important maternal complications developed, and none of the 3 stillbirths was attributable to the anesthesia.

VIRGINIA B. HARTRIDGE and ROBERT B. WILSON: Balanced anesthesia for cesarean section. Amer. J. Obstet. Gynec. 85:619-625, 1963.

The Problem of Male Infertility

A Review

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MANKIND has been concerned with the problem of infertility as far back into recorded history as one can search. Ignorance (or male egoism) uniformly blamed barrenness on the female long after Leeuwenhoek (circa 1683) had seen spermatozoa in the ejaculate of men and animals and alluded to these as "male seed."

Studies of the physiologic properties of seminal fluid and spermatozoa date back only to about 1900. Since 1900, however, investigations into the causes of male and female infertility have snowballed so much that now two journals, *Fertility and Sterility* and *The Journal of Reproduction and Fertility* are devoted wholly to these subjects. The voluminous amount of literature being published and research being carried out on the subject of male inferility are good testimonials to just how incomplete is the understanding of the causes and proper treatment of this problem. The purpose of this paper is to serve as an attempt to crystallize some of the current concepts of the diagnosis and treatment of male infertility.

INVESTIGATION OF THE MALE WITH REFERENCE TO THE ETIOLOGY OF INFERTILITY

Infertility, by implied definition, of necessity is concerned with both the male and female elements of the partnership, and neither can be ignored. Therefore, one of the most fundamental yet most commonly overlooked factors of infertility concerns the coital relationship. Any investigation of infertility in a marriage must include a careful history of coital frequency, technique, and habits (douches, lubricants). To neglect taking a careful history, even in the case of intellectual couples, is a gross oversight which might well make an unresolvable problem out of a very simple one. Supposing, however, that the matter of coital relationship is found to be normal, a great deal of additional valuable information can be obtained from a careful history.

Nutritional history. Recently Shettles[1] has presented an excellent summary of experimental work with laboratory animals in an attempt to ascertain whether dietary deficiencies cause male infertility. Certain minerals and fats have been shown to be essential to the diets of laboratory animals for adequate spermatogenesis, but it has been pointed out that to produce dietary deficiencies of these substances in the human being is almost impossible. The one possible exception to this would be, perhaps, in an individual suffering from severe steatorrhea.

Shettles also discusses attempts to produce dietary deficiencies of vitamins and proteins and the observed effect of this. Vitamin A and E deficiencies have been shown to exert morphologic testicular changes but only in certain types of experimental animals and not even consistently then. Also, certain amino acids (arginine, tryptophane, and lysine) have been shown to be essential for proper spermatogenesis in some types of experimental animals, but this work has never been confirmed in human studies. One investigator[2] has, however, given large doses of arginine to oligospermic men and noted increased sperm counts.

On the whole, however, nutritional history is mentioned only for the sake of completeness. Because of the extreme difficulty in arriving at a diet deficient enough in any of the assumed essential factors of spermatogenesis, the truly deficient diet probably does not exist.

Infectious history. Another important facet of information that can be obtained from an adequate history relates to infectious diseases. The importance of previous mumps orchitis is well recognized in infertility.

A history of gonorrhea is also of importance as well as that of "nonspecific urethritis." Either

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of these conditions, by producing urethral strictures, can interfere mechanically with the ejaculation of the seminal specimen.

History of epididymitis also can be of significance in interference with migration of sperm through normal channels. Previous tuberculous infection, whether pulmonary or urinary, should be regarded as significant because of the possibility of subclinical tuberculous epididymitis.

Endocrine history. Developmental history with respect to habits, libido, and so on, should also be investigated. Usually, grossly abnormal conditions such as Froehlich's syndrome and hypogonadism can be easily detected on routine inspection and physical examination.[3] History can be of great importance in detecting hypothyroidism, a condition long known to be associated with decreased sperm count and motility.

Trauma history. One important factor to be included in a discussion of the history of significant trauma in male infertility investigation is urethral instrumentation. This is becoming much more common and should not be omitted as an etiologic feature in producing a qualitative or quantitative decrease in the seminal secretions. Urethral strictures, verumontanitis, and chronic prostatovesiculitis can result from improper or meddlesome instrumentation.

A history of bilateral herniorrhaphy should be regarded as highly significant in cases of azospermia because of the possibility of inadvertent vas ligation. Direct testicular trauma history can be obtained in almost any adult male, infertile or not. Interpretation can be very difficult, and such trauma can probably be regarded as significant only if a history of incapacitation or accompanying epididymo-orchitis can be obtained.

Environmental history. The effect of heat in producing suppression of spermatogenesis has been well known for many years. Heat has been shown to be the cause of oligospermia or even azospermia in cases of undescended testes. Therefore, prolonged exposure to heat should be sought in taking the history of an infertile male. Occupational exposure, such as in foundry work, should not be overlooked. Many investigators place great emphasis on the harmful effect of wearing jockey shorts, which they believe causes relative oligospermia because of increasing local heat to the testes.

Nowadays, exposure to radiation should not be overlooked. Increasing numbers of individuals are being exposed to radiation through their occupations, whether in scientific research or in medical diagnostic and therapeutic fields.

Lastly, the individual's use of tobacco and alcoholic beverages, plus his sleeping habits and use of leisure time, should be considered. This leads into the obscure zone of "general well-being" and probably is significant only in affecting libido. No studies have ever been designed to show that the chronically exhausted individual who drinks and smokes excessively has decreased spermatogenesis; indeed, recent studies on cigarette smokers[4] and infertility have actually tended to dispel this theory. However, most physicians would agree that the better balanced a person's habits are, with the fewest excesses, the better his total general good health will be.

The physical examination is the next logical step in investigation of male infertility problems. A thorough general physical examination may uncover some constitutional disorder (malignancy or tuberculosis, for example), which might be a factor in causing decreased spermatogenesis. Body fat and hair distribution should always be noted as possible indications of endocrine imbalance.

The external genitalia must be carefully examined for abnormalities which might be of significance. Minimal degrees of hypospadias are probably unimportant, but more severe forms definitely will preclude proper deposition of the seminal contents in the vagina of the coital partner. Abnormal penile curvatures, urethral strictures, and urethral diverticula may be discovered on careful examination, and any of these may be significant in the etiology of male infertility. Stenosis of the external urinary meatus, an extremely common physical abnormality, is probably significant only in severe cases. In these instances it may well cause an impedance to the passage of the seminal contents.

Abnormalities of the scrotal content are also relatively common and usually easy to detect on examination. Atrophy of the testes, underdevelopment of the testes, and cryptorchidism are easily discovered. The epididymides should be palpated for evidence of distention, indicating distal obstruction, or induration, indicating previous inflammatory disease. Large hydroceles and varicoceles may be significant as etiologic factors of infertility if atrophy of the testes is found in association. The vasa should also be carefully palpated along their course to assure continuity and rule out areas of granulomata which would be noted at sites of previous vasectomy. Scrotal scars indicative of previous vasectomy may or may not be discernible. It should be mentioned at this point that it is not uncommon that a man who has had a bilateral vasectomy will undergo an infertility study and purposefully neglect to mention this fact for compensation or medicolegal reasons or simply because he does not want to disclose vasectomy to his wife and is undergoing the examination at her insistence. Congenital absence of the vas deferens is a very rare condition which may be discovered easily.

Rectal examination is of paramount importance in the male infertility investigation. The seminal vesicles and prostate should be carefully palpated in every case, and the massage specimen of seminal fluid should be examined microscopically.

The seminal vesicles should be evaluated with respect to overdistention which may be significant in terms of distal obstruction of drainage. The prostate must be evaluated for signs of chronic infection. Tenderness to prostatic palpation is usually a reliable sign of chronic infection, as is firmness which may be indicative of fibrosis or prostatic calculi as well. Calculi occasionally will be detected by a feeling of crepitation. Where doubt exists as to the presence of calculi, a roentgenogram of the pelvic region may be necessary to exclude the presence of prostatic calculi. A soft boggy prostate gland may also commonly be present in chronic prostatitis, and when accompanied by tenderness of the prostate, little else is necessary to establish the diagnosis.

Prostatic massage with microscopic examination of the resultant fluid should always be done on the initial physical examination. It is normal to obtain a seminal specimen by proper massage, and indeed often desirable, as this provides a simple method of ruling out urethral obstructing factors. The amount of specimen normally obtained may vary greatly but usually is between 1 to 5 drops.

Massage may be performed with the patient in the knee-chest position on the examining table or standing and flexed forward 90 degrees at the hips. The examiner's index finger performs the massage. Each seminal vesicle is massaged once or twice from superior to inferior aspect and the prostate is then massaged in a similar direction beginning on one lateral margin and working medially. The alternate side is next massaged also from the lateral margin medially, and the final strokes are made over the midline, also in a superior to inferior direction. The specimen may be caught directly on a glass slide and examined microscopically.

Normal seminal fluid contains few white blood cells per high-power field. Usually the presence of as many as 20 is considered to be significantly suggestive of prostatitis. Other normal constituents of seminal and prostatic fluid are epithelial cells, amorphous material, and lecithin bodies, which are very small, highly refractile granules. Spermatozoa are not normally present in massage specimens; if present, no conclusions should be made regarding motility, number, and so on.

Probably the common denominator for usage in discussing male infertility has to be the semen analysis. Excellent descriptions of the technique of performing a complete semen analysis can be found elsewhere.[3] For accurate semen analysis the following conditions should be strictly maintained: (1) three days' abstinence, prior to collection and analysis, (2) collection of the specimen in a clean glass container, not in a condom, (3) no constitutional insults such as surgery or infectious processes within sixty days prior to examination, and (4) analysis of at least 3 specimens, at sixty-day intervals, before any conclusions are made on the fertility status of the individual. It is now generally accepted that the life cycle of the male germinal cell from spermatogonia to ejaculated spermatozoa is about sixty days. Any constitutional insult to the individual may alter the process sufficiently so that aberrations in the semen analysis may be detected.

Unfortunately, great disparity exists in interpretation of the semen analysis. In recent years, much lower values of sperm count are being accepted as normal than was formerly the case. Also, the question of motility of the sperm has not been completely resolved, particularly concerning the motility duration. However, many leading experts[5] believe motility is of considerably more importance than the actual count. In recent studies,[6] the transport time of the spermatozoa through the uterus has been found to be between one and two hours. It seems reasonable that the motility of spermatozoa should be calculated between two and three hours following ejaculation when performing the routine semen analysis. Although a set of standards regarding semen analysis has never been and probably never will be accepted by all investigators, the Margaret Sanger standards of semen analysis are presented below as a working reference.

Analysis	*Normal values*
Volume	2 to 5 cc.
Liquefaction	Complete in twenty minutes
Viscosity	No thread formation
pH	7 to 7.6
Count	Over 60 million per cc. is good, 20 to 60 million per cc. is passable
Motility (forward)	60% is good, 40 to 60% is passable
Morphology	80% oval forms is good, 60 to 80% oval forms is passable

The semen specimen immediately after ejaculation is in the form of a gel. Liquefaction of this coagulum occurs normally and becomes complete in about twenty minutes. Viscosity is hard to standardize. Usually, however, this is tested qualitatively by dipping a clean glass rod into the specimen and then lifting the rod out. Viscosity is "normal" if the liquefied specimen is not tenacious and stringy and the drops fall freely from the tip of the rod.

Although the semen analysis is the basic and most singularly significant laboratory procedure in the investigation of male infertility, other laboratory tests are desirable, particularly when the semen analysis is abnormal. Probably the minimum list of desirable additional tests would include a complete blood count, routine urinalysis, blood serology, and protein-bound iodine. In some cases other tests such as blood urea nitrogen, fasting blood sugar, or Mantoux test, may be necessary. In the unusual event of a suspected case of hypogonadism or other severe hormonal imbalance, a twenty-four-hour urine collection for follicle stimulating hormone (FSH) determination may be indicated.

If the semen analysis is normal, the postcoital (Huhner) sperm migration test should be performed in every instance. In this examination, the fate of the spermatozoa in the vaginal pool and cervical mucus is determined. One to two hours following coitus, specimens are aspirated from the female's vagina and endocervical region and examined microscopically to determine motility of the sperm. If the motility in either specimen is significantly less than that determined by previous semen analysis and measured at the same interval post ejaculation, the test is considered positive and investigation as to the possible cause must be made.

Testicular biopsy is an invaluable procedure in cases of azospermia and also in cases of oligospermia where no other cause for seminal deficiency can be found. In azospermic individuals it should be combined with vasotomy which is done to determine patency of the vasa deferentia.

When testicular biopsy is done alone, it can usually be performed using local anesthesia in conjunction with moderate sedation. It should be performed using aseptic surgical technique. A simple technic consists of drawing the skin of the scrotum tightly over a selected site (away from epididymis and cord structures) of the testis and infiltrating the skin of the scrotum and the tunica albuginea with 1 per cent procaine. Using a No. 11 Bard-Parker blade, an incision of about ¼ in. is made in the skin and tunica albuginea. With only slight pressure, tissue will exude from the wound and a small amount can be excised for microscopic examination. The incision can be closed with a single suture of fine plain or chromic catgut on a small cutting needle. An alternate method for obtaining tissue is by aspiration through a No. 16 needle on a Luer-Lock syringe after a preliminary small stab incision in the skin and tunica albuginea. Although only a small plug is obtained, this is usually adequate for evaluation. The critical questions of whether or not spermatogenesis is occurring, and what kind of defect, if any, is present, are answered by examining the tissue microscopically. In an azospermic individual, if spermatogenesis is normal or near normal, the blockage of the efferent duct system is ascertained. Testicular biopsy should always be done bilaterally, and careful attention must be given to proper labeling of the specimens.

For convenience, bilateral vasotomy should be done at the same time as testicular biopsy in azospermic individuals. When done at the same time, general anesthesia is most satisfactory. Biopsy is done in the manner described above. Vasotomy can be done through bilateral scrotal incisions. The vas on each side is isolated and a longitudinal incision is made in the vas to allow probing to locate the lumen. Once the lumen is found, a blunted No. 24 needle is placed in the lumen pointing in the direction of normal spermatozoa migration. At this point, radiographic contrast material can be injected gently and roentgenograms made. Otherwise, dye material can be injected for identification purposes. The seminal vesicle can accommodate about 5 cc. of material after which it passes through the ejaculatory ducts and usually back into the bladder. Care is taken not to inject forcefully against pressure if an obstruction is encountered.

When dye is used for the injection, indigo carmine can be used on one side and then the bladder can be irrigated by urethral catheter. If blue colored irrigant returns are found, the presence of patency distal to the vasotomy site is assured. On the opposite side, a red dye, such as phenolsulphthalein, can be used to avoid confusion.

When radiographic contrast material is employed, roentgenograms may be made following injection. The advantage of this technique is that the exact site of obstruction, if any, may be visualized. The disadvantage is that the contrast material is probably more irritating to the tissues than are the more inert dyes.

Many investigators prefer transurethral catheterization of the ejaculatory ducts and retrograde vesiculographic studies. The popularity of this technique over vasotomy is based on the not uncommon occurrence of strictures at the site of vasotomy.[7] If, however, vasotomy and testicular biopsy are done at the same time, aspiration of the epididymis with immediate examination of the specimen for viable sperm can be made. The site of obstruction can be located precisely by this combined method. If, for example, the azospermic individual has normal or nearly normal spermatogenesis, has spermatozoa in the epididymal aspirate, and has no demonstrable obstruction distal to the vasotomy site, then a point of complete obstruction must be present somewhere between the epididymis and the vasotomy site. In such a case a vasoepididymal anastomosis is the indicated treatment.

THE TREATMENT OF MALE INFERTILITY

The varied etiological factors involved in male infertility are to a large extent obscure. The diagnostic procedures and the understanding of their significance, while improving, are far from well developed. Therefore, it is easy to see why the treatment of the infertile male is an extremely difficult and largely inaccurate science. With new concepts being developed continually in the changing voluminous literature on the subject and with many prominent investigators having directly opposing views, a standard treatment program is impossible to obtain. Much of the current therapy is based on prejudices and personal experience. Furthermore, while good therapy is based on good results, as in other fields of medicine, there is probably no field in which the interpretation of "good results" is subject to so much error and subjectivity as in the field of human infertility. However, bearing in mind that what will be presented is not necessarily any one person's total view of the subject, the treatment of male infertility will be discussed from the viewpoints of functional, hormonal, and surgical treatment.

Treatment of functional conditions. Included under this section of treatment is mainly the nonhormonal, nonsurgical corrections of abnormal conditions which possibly could influence the fertility of the male. Correction of such environmental factors as might be thought responsible for causing seminal abnormalities should be made if any abnormality exists. Removal of the individual from heat or radiation exposure, if this exists, of course should be done. Even though there is no direct evidence that excessive smoking or alcohol intake produces oligospermia or other seminal abnormalities, it would seem wise to correct these conditions if an abnormality is noted.

The correction or control of constitutional diseases such as diabetes, infectious mononucleosis, chronic tonsillitis, and so on, also must be attended to, in order to get the individual to the best possible point of general good health. If urinary tract infections are found, these certainly need attention as also does chronic prostatitis if present. Urethral strictures and stenosis of the external urinary meatus, if severe enough to be an obstacle to the passage of the ejaculate, need treatment by dilatation or other indicated methods.

Multivitamin treatment, although almost never indicated by reason of avitaminosis, is nearly always recommended and cannot be criticized. Also, treatment with high doses of ascorbic acid has been used by many clinicians. This has been shown to be an important component of seminal fluid and is believed to be essential in proper liquefaction of the ejaculate.

Hormonal treatment. Thyroid extract has long been used as a nonspecific therapeutic measure in infertility cases. Most commonly used by clinicians in the management of the female, it is also frequently used in oligospermic males when abnormalities are detected in the basal metabolic rate or protein-bound iodine. Doses from 1 to 3 gr. daily are used. Recently, liothyronine ("Cytomel") has come into popularity for use instead of thyroid extract and has been used most generally for cases of oligospermia of unknown cause. Doses of 25 μg. daily are recommended, but many clinicians use as high as 100 μg. daily. If favorable effects are seen in the sperm count or motility after sixty days, it is advisable to continue the patient on therapy.

Since testosterone was first developed in 1935, it has been tried numerous times as a therapeutic measure in infertility. In cases of hypogonadism, it works well in increasing the size of the phallus and of the secondary sex organs. It has never been proved, however, to increase sperm count or motility directly. In fact, administration of testosterone frequently caused a drop in sperm count and was therefore abandoned for a long time. Jöel[8] and others, however, have noted a "spermiogenic rebound phenomenon" following administration of high doses of testosterone to oligospermic males. This consists of an initial drop in the sperm count followed by a rise beyond original levels after discontinuation of therapy. The sperm count must be monitored carefully and therapy discontinued if azospermia is approached. The course of therapy consists of 150 mg. of testosterone propionate weekly for twelve weeks. Jöel reports 14 cases improved out of a series of 58 total cases and an additional 9 cases with transitory improvement. In his series, 5 cases showed deterioration in sperm count, but none became azospermic.

In cases of gonadotropic hormone deficiency where the urinary FSH excretion has been proved to be low, chorionic gonadotropin is used to stimulate spermatogenesis. The recommended dosage for use in these cases varies greatly as no one investigator has many cases on which to base his conclusions. The average recommended dose seems to be in the range of 1,000 units given three times per week for twelve weeks, with reassessment of the patient following this. Cases of oligospermia have also been treated in a similar manner to obtain what is termed an "overproduction effect" to differentiate this from the "rebound phenomenon."[9]

Finally, Goodhope[10] has reported excellent results in treating a small series of oligospermic men with a small daily dose of stilbestrol and vitamin B_{12}. The rationale behind this treatment is not at all clear but actually is no more obscure than most of the measures currently in use. He recommends a daily dose of 0.25 mg. of stilbestrol combined with 25 μg. of vitamin B_{12} and claims good results in improving the seminal contents.

Surgical treatment. Surgical measures of use in correcting abnormal conditions influencing male infertility are rare but, when proper indications exist, are invaluable. The correction of cryptorchidism by surgical (or hormonal) measures is mentioned only as a prophylactic procedure. It has been well proved that correction of this condition should be done long before puberty, at about 6 years of age, if spermatogenesis is to be obtained. Therefore, this does not properly enter into a discussion of male infertility treatment, as attempts to correct this abnormality in an adult infertile male are merely meddlesome.

Hydrocelectomy is indicated in infertility cases where oligospermia exists, as often the hydrocele becomes large enough to cause atrophy of the testis by compromising the circulation to the testis. Charny[11] has recently advocated varicocelectomy in every patient with a varicocele, regardless of its size, when the patient has a coexisting seminal abnormality.

Surgical correction of urethral diverticula and other conditions of the urethra which present a barrier to the free ejaculation of the seminal contents is also, of course, recommended. Hypospadias repair is, however, the exception. The recovery phase from such a procedure is so long that much active reproduction time is wasted. Furthermore, good results cannot be assured. After consideration of both of these factors, it is usually thought to be much more satisfactory to use homologous sperm insemination instead.

Surgical procedures on the vasa deferentia such as vasovasostomy (in the cases where previous vasectomy has been done) and vasoepididymal anastomoses definitely have a place as corrective surgical procedures in isolated instances. The outcome of such procedures can never be predicted, and a successful result in 30 to 50 per cent of cases is generally regarded as quite good.

RECENT ADVANCES IN THE STUDY OF HUMAN INFERTILITY

As mentioned previously, numerous investigative studies are being continually carried out in an attempt to uncover the many mysteries of human reproduction and infertility which still exist. To attempt to present all, or even a majority, of these would require an exhausting effort. However, some of the most interesting and promising recent advances will be briefly mentioned.

In the past, much stress has been placed upon the importance of sustained motility of spermatozoa. Calculations of the speed of motion of spermatozoa in relation to the distance from the external cervical os to the fallopian tube gave what was assumed to be the migration lifetime required by spermatozoa vigorous enough to cause impregnation. This assumed motility lifetime led to the conclusion that motility of spermatozoa twenty-four hours after ejaculation was of major importance.

It now seems, however, that the previously accepted figure for sperm migration speed through the uterus may have been greatly in error. Bickers[6] has shown that migration of the sperm through the uterus is greatly accelerated by continuous rhythmic contractions of the uterus. He believes that these contractions are the direct result of hormonal (estrogen) influence on the uterus. Karlson[12] believes that the seminal fluid of the male contributes an important effect on motility of the uterus.

One of the most fascinating fields of investigation concerns the effect of seminal fluid on the motility of sperm. Several years ago Mann[13] theorized that the seminal plasma exerted an influence on the motility of the sperm. Recently Rozin[14] has developed this idea by separating poorly motile sperm from oligospermic individuals and "washing" this a number of times with seminal fluid from normospermic individuals. This has been found to increase the motility of the poorly motile sperm in a surprisingly high number of instances. Eckerling[15] has applied a variation of this (by substituting blood serum for seminal plasma) to 21 clinical cases and has obtained improvement in motility in 13 of them. If, after more clinical trial, this is found to be a reliable method of improving motility, it may well become an important tool in the treatment of male infertility.

Another field of important investigation concerns the large amount of experimental work being conducted in an attempt to discover the significance of antigen-antibody reactions which may exist between the human male and female. Whether these reactions truly occur, and whether or not they play any part at all as a cause of infertility, are questions that must be answered. Edwards[16] has shown experimentally that in animals a seminal antigen is absorbed by the female in sufficient amount to result in an antibody response. Weil[17] has proved the existence of a seminal fluid antigen in the human male, and Katsh[18] has found at least 4 antigens existing in the spermatozoa of the human male. If these antigenic substances are proved to cause a significant antibody response in the human female as well as the experimental animal, this may also open an entirely new concept of treatment.

SUMMARY

An attempt to outline an approach to the greatly complicated problem of male infertility has been made in the pattern of the usual medical workup. The most important factors of history taking, physical examination, and laboratory studies have been presented as a working basis for diagnosis of any existing significant abnormalities. Some of the current ideas in treatment of this complex and incompletely understood situation have been mentioned, and an attempt has been made to present some of the most interesting and promising current fields of study. While a vast amount of investigative study is constantly being done in the field of male infertility, it is apparent that our present knowledge of the subject is very incomplete, and effective treatment of this condition must await a much more thorough understanding.

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TETRACYCLINE FLUORESCENCE in diseased tissues cannot be correlated accurately with malignant characteristics. Fluorescence is detected in some, but not all, primary tumors in postmortem specimens from patients who have received tetracycline for varying periods of time. Fluorescence rarely is seen in metastatic lymph nodes and appears in other metastatic lesions sporadically. Necrotic, inflamed tissues and noncancerous bone often fluoresce brightly. Identification of fluorescent tissue at laparotomy also is unreliable.

NORMAN B. ACKERMAN and ARTHUR S. MCFEE: Tetracycline fluorescence in benign and malignant tissues. Surgery 53:247-252, 1963.

Reaction to Bromsulphalein

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THE BROMSULPHALEIN (BSP) TEST[3-5] is one of the liver function tests that has withstood the test of time and has retained its value. In spite of the development of newer parameters to determine liver function, the Bromsulphalein test remains one of the most, if not the most, sensitive laboratory examinations available for the evaluation of liver function.

Serious reactions to the administration of Bromsulphalein (disodium phenoltetrabromphthaleinsulfonate) rarely have been reported since introduction of the test to clinical practice by Rosenthal and White in 1925. This lack of mention in the literature leads one to question whether or not many physicians are aware that reactions to the administration of BSP may occur and that, on occasion, the reaction may be severe or even fatal.

An example each of a severe reaction and an anaphylactoid reaction to BSP are reported herein. In addition to these 2 cases, we personally have observed or are acquainted with 4 others in which severe or moderately severe anaphylactoid reactions developed: All occurred during the past year.

CASE REPORTS

Case 1. A 23-year-old single white girl was admitted to the hospital with a history of mild febrile illness of one week's duration. She felt weak and nauseated and thought her urine was unusually dark.

Upon entry into the hospital, her blood pressure was 130/84 and her pulse, 84 and regular. There was no icterus present. There was some tenderness over the liver, which was palpable just below the right costal margin. She denied any history of allergies or drug reactions.

Since a possible diagnosis of anicteric hepatitis was being considered, the patient was given the usual dose of 5 mg. per kilogram of body weight of BSP intravenously. Within five minutes after injection the patient became pale, perspired profusely, and lost consciousness: The pulse could not be felt and her blood pressure dropped to zero. The patient had several involuntary contractions of the arms and legs. Epinephrine (Adrenalin), 1 cc. of 1:1,000 aqueous, was administered intravenously and some five minutes later her blood pressure had risen to 90/50, the pulse was weak and rapid (128 per minute), and the patient was semiconscious: Involuntarily, a large bowel movement was passed. Blood was withdrawn for a blood sugar determination, which was 120 mg. per cent. (A subsequent 4-hour glucose tolerance test was entirely normal.) Further increase in blood pressure continued slowly until normal value was reached some ten hours after the incident. The patient continued to complain of abdominal cramps and headache for another twenty-four hours. The next morning her blood pressure was 100/66 and during the remainder of her hospital stay averaged 118/76. The pulse remained regular, averaging 80 per minute. The patient was afebrile throughout the entire episode and hospitalization.

Several other reactions to the administration of BSP have been observed by us, none of them having the severity of the case described above. In general, they have been anaphylactic reactions of greater or lesser degree. Mild, transient reactions of erythema or sensations of warmth do occur, but they are not taken into consideration in this instance. Reactions involving widespread erythema and wheals and cardiovascular reactions are considered to be potentially dangerous. A typical example of a rather severe reaction to BSP is illustrated by the following case.

Case 2.[*] A 27-year-old white man was hospitalized for evaluation of chest pain that proved to be a posterior basal myocardial infarct. Upon admission his blood pressure was 160/110 and pulse, 130 per minute. Fifteen minutes after injection of BSP in the usual dose, the patient developed generalized erythema, wheals (10 by 10 cm.), and dyspnea. Immediately, hydrocorti-

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[*] Attending physician, Embree H. Blackard, M.D., kindly permitted us to use these data.

sone (Solu-Cortef), 100 mg., was given intravenously and diphenhydramine hydrochloride (Benadryl), 25 mg., intramuscularly. Thirty-five minutes after therapy was started, the dyspnea had disappeared and, one and a half hours after start of therapy, 80 per cent of the wheals had disappeared.

Chambers and Moister[1] make mention of a reaction to BSP. They also state that in Italy, during World War II, as many as 7,000 tests per month were made and no severe reactions were observed. They quote Ingelfinger, also, as not observing any severe reactions to the experimental use of massive doses of the dye intravenously. This would tend to support the impression of low toxicity, both in clinical and laboratory studies of the BSP in use today. Yet, Mallin and Gambescia[2] and Venger[6] recently reported 2 cases in which the patients died shortly after the injection of sulfobromophthalein sodium.

The literature does mention rare pyogenic reactions or occasional nausea, sometimes with vomiting. The former, in most instances, has been ascribed to impurities in the injected material and not to the dye as such. Urticaria and asthma, as well as exacerbations of the latter, have been observed. Syncope following intravenous injections of the dye, in general, has been thought to be due to the patient's fright rather than to reactions to the material. In view of the incidents described in the literature as well as in the cases mentioned above, it may be advisable to caution against the indiscriminate use of BSP, particularly in patients with a history of allergic manifestations and urticaria and asthma, or both.

The ready availability of epinephrine, as well as injectable corticosteroids and antihistamines, is indicated whenever a BSP test is performed.

SUMMARY

Attention is called to the occasional occurrence of severe systemic and anaphylactoid reactions to Bromsulphalein. Two examples are reported. The ready availability of corticosteroids for intravenous use, epinephrine, and injectable antihistamines is suggested.

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DETERMINATION OF lactic dehydrogenase (LDH) activity remaining in serum after incubation at 65° C. for thirty minutes is valuable in establishing a diagnosis of myocardial infarction. The test is especially helpful in instances of concomitant damage to other organs as in hepatocellular injury and surgical trauma. Homogenates of heart, liver, and skeletal muscle were incubated at temperatures between 50 and 70° C. The LDH in homogenates of heart was more thermostable than LDH in homogenates of liver and muscle. Heat stability of LDH in sera of patients with acute myocardial infarction resembled stability of LDH in heart homogenates. LDH stability in patients with infectious hepatitis resembled that of LDH in liver homogenates.

PAUL E. STRANDJORD, KATHLEEN J. CLAYSON, and ESTHER F. FREIER: Heat stable lactate dehydrogenase in the diagnosis of myocardial infarction. J.A.M.A. 182:1099-1102, 1962.

Differential Diagnosis of Sacroiliac Joint Disease

A Review of Current Opinion

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As a cause of low-back pain, sacroiliac arthritis is much less frequently diagnosed than two decades ago. The various lesions of the lumbosacral articulations have received more emphasis.[1] In an etiologic study of 2,000 cases of backache from the Mayo Clinic, sacroiliac disease was not separately classified, and rheumatoid, tuberculous, and infectious spondylitis constituted but 8.6 per cent of all the cases.[2]

However, pathologic changes in the sacroiliac arthrosis continue to be reported in association with various diseases. Inflammation of the joint or of the overlying pyriformis muscle can directly involve the sciatic nerve or the free sensory nerve endings, causing deep discomfort either localized to the hip or radiating down the posterior lateral aspect of the leg.[3] Diagnosis depends on clinical and roentgenographic evidence. The following is a differential review of sacroiliac joint disease (see table 1).

A. DEGENERATIVE CONDITIONS

The sacroiliac joints are diarthroses and normally have a slight motion. Ultimately, destruction of articular cartilage with reactive bony hypertrophy may occur within the joints.[4] However, disagreement exists concerning the frequency and degree of degenerative changes. Pugh[5] states, "It is seldom that osteoarthritis affects the sacroiliac joints." Forestier[6] has found sacroiliac arthritis in elderly obese females with lumbosacral pain who have weak muscles, no lumbar stiffness, and tender sacroiliac joints. Horwitz and Smith[7] and MacDonald and Hunt[4] are in general agreement with Sashin,[8] who found progressive degenerative changes in the sacroiliac joints of patients above age 30. Sashin observed in 257 necropsied cases that ankylosis of the joints occurred in 57 per cent of the men and 5.8 per cent of the women between the ages of 30 and 50, while the incidence was 82 and 30 per cent, respectively, at 60 years or above. The first roentgenographic changes occur in the anterior superior part of the capsule as exostosis and bony bridging.[7] As in other joints, erosion of the cortex and eburnations appear. Consequently, there is narrowing of the joint space or complete ankylosis. Occasionally, cystlike lesions are seen near the joint giving the false impression of a destructive lesion.

Malalignments of bones (as from scoliosis) can result in marginal sclerosis of one of the sacroiliac joints and eventual fusion.

Osteitis condensans ilii occurs most frequently in females (90 per cent) of childbearing age. The etiology is unknown, but two hypotheses are: unusual pelvic stress resulting in early degenerative changes, and avascular necrosis of growing cartilage.[5,9,10] Often there are recurrent attacks of low-back pain with radiation into the buttocks or pelvic discomfort. Motion aggravates this pain and recumbency gives relief. Roentgenologic manifestations are marginal sclerosis of the ilium with relative sparing of the sacrum and the joint. The anterior cortex of the inferior segment of the ilium is usually most affected. The process is frequently bilateral, though often asymmetric, with a rather sharp demarcation between sclerotic and normal bone.

Abel[11] reported that 61 per cent of 160 traumatic paraplegic patients had sacroiliac disease. The roentgenograms demonstrated para-articular rarefaction with narrowing or complete fusion of the joint, similar to Marie-Strümpell spondylitis. He was unable to find a statistical correlation between the joint changes and the site or duration of injury, level of transection, presence of para-osteoarthropathies, age, or other clinical signs. Although there is a high incidence of urinary tract infections in these patients, the actual etiology has not been established.[12]

B. INFECTIOUS DISEASE

Tuberculosis is the most common infection of

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the sacroiliac joint. Usually, it occurs insidiously in children or young adults.[13] Radiographically, the destructive bone changes may resemble rheumatoid spondylitis, but they are more often unilateral. However, the focal destruction of cancellous bone leading to collapse of the vertebral body and reduction of the intervertebral space, with infectious sequestra (10 per cent), should separate the two conditions.[5,9]

Painful swollen joints with discomfort along the vertebra may be associated with brucellosis. In the chronic form the clinical picture may resemble rheumatoid arthritis or spondylitis. While a destructive process in the sacroiliac joints may present a differential problem, the changes of the spinal column usually do not. The vertebral alterations of brucellosis (and typhoid fever) are similar to those with tuberculosis but cause more reactive proliferation of bone in adjacent vertebra.[5] When doubt exists, the presence of agglutinins or isolation of brucella from the tissues or blood should clarify the question.

Neither gonorrhea, syphilis, nor the pyogenic bacteria (listed in table 1) frequently affect the sacroiliac joints.

C. RHEUMATIC DISEASE

Ankylosing (rheumatoid) spondylitis (Marie-Strümpell arthritis, pelvospondylitis ossificans), is a progressive, chronic rheumatic inflammatory disease of ankylosing tendency generally starting in the sacroiliac joints and involving the spine in an ascending sequence.[12] Male patients predominate 9 to 1, and the usual age of onset is 15 to 40 years. Romanus[14] found that in 117 male patients, 98 per cent had chronic nonspecific urogenital infections (prostatofasciculitis, often utriculitis, and Cowperitis) which were related to the onset of the pelvospondylitis symptoms. In one-third of the cases, exacerbation of the urogenital infections was accompanied by an increase in the activity of the pelvospondylitis, but treatment of the infection usually did not alter the symptoms of pelvospondylitis. In series reported by Oates[15] and Forestier,[6] 84 and 60 per cent had genitourinary infections. A unilateral nongranulomatous anterior uveitis has been observed in about 20 per cent of the cases.[16] Tendoperiostitis of the calcaneus causing talalgia occurs frequently.[12,13] Hersh[17] and Romanus[12] have shown that heredity is a factor in the disease, due to an autosomal—not sex-linked—factor with incomplete penetrance.

The symptoms vary from low backache, aggravated by torsion or lying in the supine position, to severe deep hip pain with or without sciatic radiation. Characteristically, the pain is intermittent and may awaken the patient from his sleep, in which case ambulation or assuming a flexed position may afford relief. Later there is stiffness of the back, usually beginning in the hips and ascending, and frequently resulting in diminished thoracic expansion.[13]

The sedimentation rate is often elevated, and there may be mild hypochromic microcytic anemia with a leukocytosis of less than 15,000. X-ray treatment of the involved bone affords relief of symptoms, but there is evidence of an increased incidence of leukemia in treated spondylitic patients.[18]

Roentgen examination reveals first a patch of decalcification, predominately of the iliac border with widening of the joint fissure. The subchondral surface becomes irregular and sclerosis occurs about the arthrosis, again most marked on the iliac side. At the same time, new bone forms in the area of destruction with osseous bridging of the joint fissure and eventual fusion. The process may take two to twenty years. Concomitantly or slightly later, ascending spine changes occur: deossification about the apophyseal joints, followed by narrowing and fusion; osteoporosis of vertebra, with a relative preservation of the disc space; and characteristic calcification beneath the longitudinal spinous ligaments.

Rheumatoid arthritis of peripheral joints (Still's disease of children) and ankylosing spondylitis are separable, both clinically and radiograph-

TABLE 1

DIFFERENTIAL DIAGNOSIS OF SACROILIAC JOINT DISEASE

- Degenerative Conditions
    - Osteoarthritis
    - Osteitis condensans ilii
    - Paraplegic spondylitis
- Infectious Disease
    - Tuberculosis
    - Brucellosis
    - Gonorrhea and syphilis
    - Other bacterial causes of osteomyelitis include: staphylococci; streptococci; pneumococci; and salmonella typhosa
- Rheumatic Disease
    - Ankylosing (rheumatoid) spondylitis
    - Rheumatoid arthritis
    - Recurrent rheumatic fever
    - Reiter's disease
- Idiopathic Systemic Disease
    - Psoriasis
    - Ulcerative colitis
    - Intestinal lipodystrophy
- Metabolic Disease
    - Alkaptonuric ochronosis
    - Gout

ically, but share certain pathoetiologic similarities. Ten to 43 per cent of the patients with spondylitis will have peripheral rheumatoid features, usually of the proximal, rarely of peripheral, joints.[19,20] Conversely, 10 to 30 per cent with rheumatoid arthritis will develop sacroiliac arthritis.[19–21] Female patients are afflicted three times as often as male, and the onset is usually in the adult years. The syndrome consists of weight loss, paresthesias, symmetric peripheral joint involvement, particularly fusiform swelling of the interphalangeal joints, and remissions and exacerbations. In involved joints erosion of the anterior cortex, thinning of cartilage, and decalcification of bone may lead to contractures, subluxations, ankylosis, and muscle atrophy. Serologic tests may be confirmatory.[20,21]

Occasionally, recurrent attacks of rheumatic fever are associated with an ankylosing spondylitis. Permanent joint changes resulting from rheumatic fever are exceptionally rare. Yet, in 19 cases collected by Sharp,[23] half showed radiographically abnormal sacroiliac joints, some indistinguishable from ankylosing spondylitis. However, the signs and symptoms of this condition are quite different from ankylosing spondylitis or rheumatoid arthritis, and the advanced spinal changes are distinctive.[23]

Reiter's syndrome consists of urethritis, conjunctivitis, and polyarthritis occurring in sequence in a period of two to forty days. The arthritis occurs suddenly with signs of inflammation usually in the knees, ankles, and feet. Peripheral joint involvement, conjunctivitis, keratoderma, and ulcerations of the penis and mouth assist in differentiating this syndrome from ankylosing spondylitis. Both conditions predominately affect males in the same age range. Although the pathogenesis is unknown, a urethritis (often venereal) occurs in about 75 per cent of the cases.[23] The relationship of the syndrome to outbreaks of dysentery lends additional support to those who argue for an infectious etiology.[12] In protracted cases of Reiter's disease the incidence of ankylosing spondylitis rises to as high as 54 per cent, but the overall incidence is between 20 and 30 per cent.[16] Sacroiliac changes may be similar, but asymmetric involvement is much commoner in Reiter's disease. Proliferation of new bone at affected sites and extensive ossification of spinous ligaments are prominent features.[23]

D. IDIOPATHIC SYSTEMIC DISEASES

In 100 consecutive cases of ankylosing spondylitis, Fletcher and Rose[24] found 4 with psoriasis. The incidence of psoriasis in the general population is 0.3 per cent. They conclude that the incidence of psoriasis in patients with polyarthritis is unduly high. When sacroiliac joint involvement occurs, extensive arthritis of the spine and limbs is usually present. Involvement of the distal interphalangeal joints similar to that in rheumatoid arthritis is a more typical finding.

In 100 cases of ulcerative colitis Zvaifler and Martel[25] found 6 per cent had ankylosing spondylitis, whereas Bywaters and Ansell[26] reported 14 per cent in their series of 37 patients.

Eyler and Doub[27] observed changes indistinguishable from Marie-Strümpell type arthritis of the sacroiliac joints in a 35-year-old woman and a 49-year-old man with intestinal lipodystrophy.

Before any definite relationship between systemic disease and ankylosing spondylitis can be established, a careful analysis of the chronological incidence of ankylosing spondylitis (exactly defined) must be accomplished.

E. METABOLIC DISEASES

In alkaptonuric ochronosis there is a deficiency in the enzymes which break down tyroxine and phenylalanine, resulting in an abnormally large quantity of homogentisic acid in the blood and urine. Clinically, it can affect either sex while in the middle years, causing dark urine, slate-colored skin and sclerae, and pain and swelling of the peripheral joints.[5,9] Roentgen manifestations are primarily in the spine where the annulus fibrosus calcifies with marked secondary osteoarthritic changes. According to de Lorimier,[9] the sacroiliac joint is a site of predilection, which may show osteoarthritic change secondary to calcification in the articular cartilage.

Gout, a disorder of purine metabolism, involves almost exclusively the distal joints. Pugh[5] states, ". . . in rare instances, involvement of the sacroiliac joints may lead to destructive changes which closely resemble rheumatoid spondylitis."

Many metabolic and endocrine disorders alter pelvic bone structure but do not exclusively affect the sacroiliac articulation. Similarly, neoplastic processes can involve it but rarely originate in the joint.

SUMMARY AND CONCLUSIONS

Osseous articulations are subject both to degenerative change of stress and physiological change of aging. The sacroiliac joint is a prime example. Progressive degenerative alterations commence in early adult life, resulting in ankylosis in 80 per cent of men and 30 per cent of women over the age of 60 years. Elderly obese women with weak

TABLE 2

DIFFERENTIAL DIAGNOSIS OF SACROILIAC ARTHRITIS IN A YOUNG ADULT

	Osteitis condensans ilii	*Rheumatoid arthritis*	*Ankylosing spondylitis*	*Reiter's disease*
Sex ratio	9:1 F	3:1 F	9:1 M	M
Age	15-30	Any	15-40	15-40
Peripheral joint involvement	No	Yes	10-43%	Yes
Sacroiliac joint involvement	No	10-30%	Yes	20-30% (higher in chronic cases)
Course of the disease	Benign	Severe with remissions	Chronic	Severe

musculature develop more sacroiliac osteoarthritis than their thinner counterparts. Debilitated patients have earlier joint degeneration than normal persons.

Of the infectious diseases, only tuberculosis commonly involves the sacroiliac arthrosis. Infectious, systemic, metabolic, and neoplastic diseases usually manifest extensive skeletal alterations with symptoms which overshadow pelvic joint pain.

The young adult who has low-back discomfort and roentgenographic evidence of sacroiliac arthritis may represent a difficult differential problem (see table 2). If occurring in a woman, osteitis condensans and rheumatoid arthritis should be considered. The former condition is relatively benign and limited to the pelvic bones, while the latter condition causes pelvospondylitis in only about 20 per cent of the cases and rarely is without systemic and peripheral joint symptoms. A positive "rheumatoid factor" test confirms the diagnosis of rheumatoid arthritis.[28] In a man, ankylosing spondylitis and Reiter's disease should be considered. The former is more benign and relatively isolated to the pelvis and spine, while the latter characteristically consists of conjunctivitis, urethritis, and a toric arthritis of the knees and ankles.

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Phenylketonuria in the State Institutions for the Mentally Retarded in North Dakota

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In 1934, Fölling identified phenylpyruvic acid in the urine of a mentally retarded patient.[1] Since his work, the biochemical defect producing phenylketonuria was established[2–4] as well as the genetic transmission of the defect.[5,6] Several reviews concerning the genetic aspects, incidence, and dietary treatment of the disease have appeared in the literature.[7–11] Also, numerous studies have been carried out to determine the incidence of phenylketonuria among the mentally retarded in state institutions.[12–14] To date, no such study has been made in the state of North Dakota.

The purpose of our study was twofold: first, to determine the number of patients with phenylketonuria at the state institutions (Grafton State School and the Unit for the Mentally Retarded at the San Haven Sanatorium); second, to contact the family physicians and the immediate relatives of patients with phenylketonuria to inform them of the diagnosis and to discuss the disease with the families to acquaint them with the significance and implications of the disease.

METHODS

A screening program was initiated which included the testing of urine specimens of all the mentally retarded patients at the institutions mentioned above; the presumptive tests used were the ferric chloride test[15] and one using Phenistix. In all cases where these tests were positive, serum phenylalanine determinations[16] were done in duplicate to establish a definite diagnosis of phenylketonuria.

After the diagnosis of phenylketonuria was established, each patient's family physician and immediate relatives were contacted. Personal visits were made to parents or other close relatives, such as brothers and sisters, whenever it was possible. Names of other relatives, including nieces, nephews, and cousins, were obtained; many of these were also contacted personally. Letters were sent to all relatives who were not visited personally, including those not living in North Dakota. The study being made was explained to these people; the significance of phenylketonuria, including the cause and the need for early diagnosis for the prevention of mental retardation, was discussed; and each was advised to see his physician and inform him of the presence of phenylketonuria in the family.

RESULTS

The total number of patients screened was 1,369 (735 male and 634 female). Of these, 29 had positive presumptive phenylketonuria urine tests; serum phenylalanine determinations were run in duplicate on these patients. One group of 11 patients showed normal or slightly elevated phenylalanine values, ranging from 2.2 to 4.7 mg. per cent as shown in table 1. The ferric chloride test was positive in all cases. The Phenistix result was 40 or less with one exception (R. W.) in which instance the value was 100. Because of the discrepancy between the phenylalanine and the Phenistix, the serum phenylalanine was repeated on another serum specimen. The second result, while slightly lower, remained in the range of the rest of the cases.

The other group of 18 patients all showed elevated phenylalanine determinations, ranging from 13.6 to 49.1 mg. per cent, shown in table 2. In all cases the ferric chloride was positive and the Phenistix value was 100. Of the 18 patients who had positive tests with all three methods,

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TABLE 1

RESULTS OF NONPHENYLKETONURIC SUBJECTS SHOWING POSITIVE SCREENING TESTS

Patient	Sex	Age	Urine tests: Phenistix	Urine tests: Ferric chloride	Serum phenylalanine (mg. %)
1. A. M. B.	F	25	15–40	positive	2.2
2. C. F.	F	43	15	positive	2.5
3. I. K.	F	31	40	positive	2.6
4. E. S.	F	48	(?) 15	positive	2.6
5. H. R.	F	60	15	positive	2.8
6. M. H.	F	43	15	positive	3.2
7. W. H.	M	30	15–40	positive	3.5
8. C. A. H.	F	65	<15	positive	3.5
9. S. P.	F	8	15	positive	4.0
10. B. L. D.	F	28	<15	positive	4.1
11. R. W.	M	20	100	positive	4.7

8 were male and 10 were female. The proportion of phenylketonuric patients among the institutionalized mentally retarded individuals was 1.31 per cent.

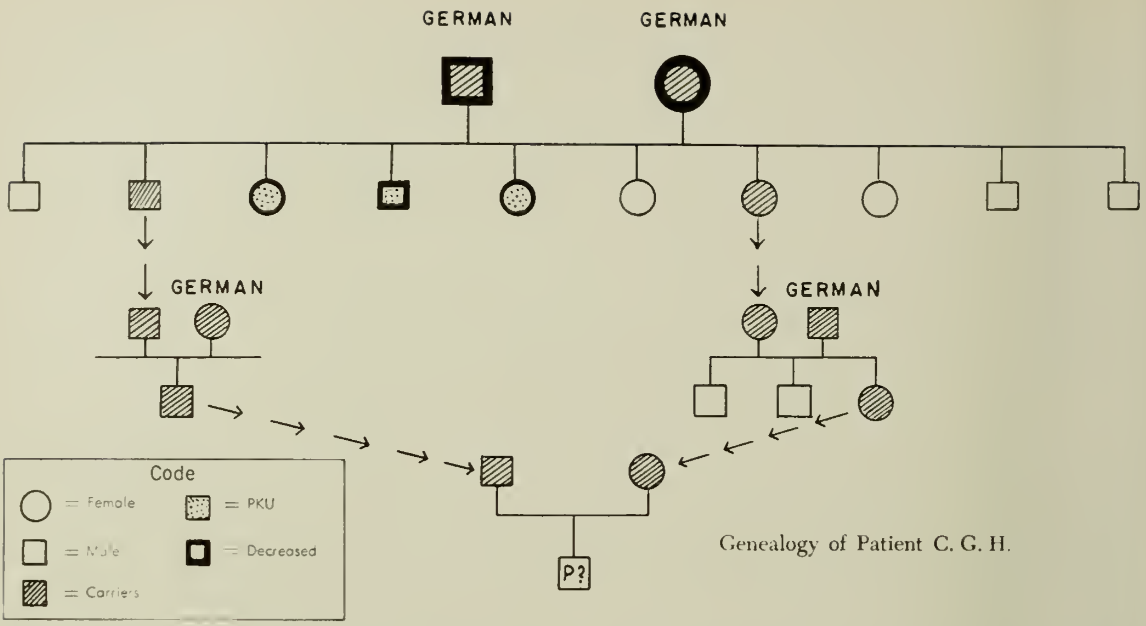
Visits were made to 15 families (table 2); families of 2 of the remaining 3 patients could not be contacted and the third family did not respond to correspondence. Four of the patients were of German parents, 3 of Norwegian, and 1 of Swedish; the remaining were a combination of nationalities including Polish, Czechoslovakian, Bohemian, English, Irish, and Scotch. One parent of each of 8 couples had Scandinavian heritage.

From the case histories obtained on home visits we learned that, in the phenylketonuric children, mental retardation was observed by the mother between the ages of 6 and 18 months; a history of indefinite or conflicting diagnosis was common. The chief complaints included a delay in sitting, walking, and talking and generally slow motor and mental development. The presence of seizures in early infancy was noted in 1 patient. Severe sensitivity to noise and general irritability were noted in 14. Three had a history of extensive vomiting, requiring frequent hospitalization. A moderate to severe rash was specifically noted by 10 of the mothers. Malodorous urine had been noted by 11 of the mothers. Those mothers who had more than one

TABLE 2

RESULTS OF SCREENING TESTS ON PHENYLKETONURIC PATIENTS

Patient	Sex	Age	Urine tests: Phenistix	Urine tests: Ferric chloride	Serum phenylalanine (mg. %)
1. A. O. B.	M	48	100	positive	13.6
2. D. W.	F	13	100	positive	18.4
3. C. M.	M	28	40–100	positive	20.6
4. E. O.	F	42	100	positive	29.7
5. D. G.	M	12	100	positive	30.6
6. A. T.	F	32	100	positive	32.6
7. V. W.	F	29	100	positive	32.8
8. M. B.	F	45	100	positive	33.5
9. V. S.	F	13	100	positive	34.5
10. M. L.	F	18	100	positive	35.6
11. C. G. H.	M	61	100	positive	36.0
12. T. D.	M	15	100	positive	36.3
13. K. J. T.	F	4	100	positive	36.5
14. G. D.	M	21	100	positive	36.9
15. M. T.	F	16	100	positive	37.4
16. M. M.	F	14	100	positive	39.3
17. G. T.	M	32	100	positive	43.6
18. L. V.	M	22	100	positive	49.1



Genealogy of Patient C. G. H.

phenylketonuric baby admitted having noted the slow development much earlier in the second child. A consistent physical finding in all but 2 cases was the typical blonde hair, blue eyes, and fair skin. Several mothers had noted a lightening of the hair and eyes at about the same time they had become aware that the child was retarded. The most consistent finding was the history of a normal and beautiful baby at birth with a lack of mental development or a regression from about age 6 months to 1½ years.

Four mothers who were contacted were still of the childbearing age. Of these, 2 had another previously diagnosed phenylketonuric child at home under medical care and on a low phenylalanine diet. One of them had a preschool-aged child; this child and the other older children had been given at least one phenylalanine analysis which proved normal. A phenylalanine determination done on these children during this study was also normal.

It is of interest that most of the mothers of the families contacted were not familiar with the disease, phenylketonuria, before our visit. Two mothers understood the disease and 2 other mothers of childbearing age had read about phenylketonuria in magazines and vaguely suspected the diagnosis. In only 1 of the 18 patients had the exact cause of mental deficiency ever been previously diagnosed.

It has been reported that the rate of consanguinity among the parents of affected individuals is significantly higher than average.[17] In our study, we learned that the parents of 1 patient were first cousins; thus the frequency of consanguineous marriage in phenylketonuria patients in North Dakota is 5.6 per cent. In the interview with a brother and sister of Patient C. G. H. (figure 1), we learned that 2 sisters died with phenylketonuria at about 1 year of age. A child of married cousins of this same patient has significant symptoms of the disease.

DISCUSSION

It has been shown that the elevation of blood phenylalanine is indicative of phenylketonuria.[18] The phenylalanine determination used in our study was that of LaDu and Michael.[16] These investigators obtained values of 26.2 to 59.1 mg. per cent of 10 phenylketonuric individuals. Our values were somewhat lower, ranging from 13.6 to 49.1 mg. per cent; however, these results compare with those of Jervis and associates.[18]

The reaction of ferric chloride with phenylpyruvic acid excreted by phenylketonuric patients produces a green color. The positive ferric chloride reactions which we obtained on the specimens of the group of patients who were shown not to have phenylketonuria could be due to the presence of other metabolic products present in the urine which also react with ferric chloride producing a green color.[19] Some of these products are bile, homogentisic acid (alcaptonuria), and catecholamines.

From our case histories obtained during our visits, we noted that the symptoms observed by the mothers were the typical clinical symptoms of phenylketonuria.

The frequency of phenylketonuria among the mentally retarded in institutions has been reported by a number of investigators. These reports indicate a considerable variation.

SUMMARY

A screening program was done to diagnose phenylketonuria among the patients residing in the Grafton State School and the Unit for the Mentally Retarded at San Haven Sanatorium. All retarded residents were checked by the Phenistix and ferric chloride screening tests. All positive findings were verified by the elevation of serum phenylalanine. Eighteen patients out of 1,369 (1.31 per cent) were found to have positive reactions by all 3 methods.

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FASTING BLOOD GLUCOSE level determination is not a highly discriminatory test for diabetes. Although glucose tolerance curves are more frequently abnormal in patients with higher values for fasting blood glucose, some patients have normal tolerance or only equivocal impairment, even at very high fasting values. Diabetes is likely if fasting blood glucose value is greater than 110 mg. per 100 cc. at 2 different times, and a glucose tolerance test should be given if blood glucose is between 91 to 100 mg. A one-hour value for the glucose tolerance test of 150 mg. per 100 cc. is definitely abnormal, and a value of 140 mg. is normal. A two-hour value is abnormal if greater than 110 mg. and normal if less than 95 mg. Any measurement within these ranges or a combination of normal and abnormal values in the 2 determinations is considered equivocal evidence. Obese patients with such a result are retested after a few months of weight reduction. Data from 401 glucose tolerance tests showed equivocal tolerance in 6% of patients with blood values of 70 mg. per 100 cc. or less, in 14% with blood values between 71 and 100 mg., and in 3.6% with higher fasting blood glucose.

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Retirement or Dismissal

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Sooner or later, most men must come to that inevitable point, retirement—voluntary, involuntary, or mandatory. Retirement is welcomed by some who are wearied by the strain and cares of a routine uninteresting job and look forward to laying down the load to enjoy a prolonged carefree vacation. They may forget that all play and even the best of hobbies, like a most luscious dessert, make a poor steady diet. The farmer who retires after years of toil to "come to town to die" frequently makes it within the year.

Involuntary retirement through accident or illness, serious enough at any age unless adequate preparations have been made, becomes catastrophic if it occurs in the young adult before financial stability has been attained. Yet, many fail to start their retirement plans early.

Mandatory retirement at a certain stated age, a plan so commonly adopted by business firms and educational institutions, offers to the administration of these organizations a convenient solution to an otherwise sensitive and difficult problem. The recurring questions are: Who is to be retired and why? Who is to be retained? Such a plan assumes that all men are equal and alike in their abilities. This is far from true. Aging is a physiologic, not necessarily a chronologic, process. Some men are old, deteriorated, and doddering at fifty. Others beyond the age of seventy are alert and enthusiastic, possessing a world of knowledge and experience which should not be wasted. An individual in such a category might be relieved of much routine responsibility, but space and facilities should be reserved for his use so that he may continue his studies or his writing in order that others may profit by his knowledge, judgment, and wisdom. Not infrequently we find that the alert, active physician, retired because of age, enjoys his enforced vacation for a short time and then goes into a decline mentally and physically. If and when a new interest is found, he may pick up rapidly and return to his former state.

Retirement for the physician presents a varied picture. If he has retained his health, he is frequently, like the old firehorse, turned out to pasture but still eager to respond to every call. Some prefer gradually increasing vacation periods before retirement. These vacations may increase in number and duration until there is little time left for active work. There is much truth in the remark of an elderly surgeon, "You don't need to plan to retire, your patients will gradually take care of that for you."

The degree and type of specialization must also alter the time, degree, and type of retirement. The surgeon, particularly if he is engaged in the more difficult and prolonged technical procedures, is more susceptible to the ravages of time than is the general practitioner, the internist, the dermatologist, or the insurance examiner. Because of the more definitive nature of his work he can become far more dangerous if deterioration sets in.

Most tragic is the situation in which a physician, motivated by financial considerations, stubbornness, or ignorance of his true condition, continues to practice or operate and to produce one noisome situation after another. Fortunately, most physicians are conscientious and co-operative, so that problems of this sort occur but rarely. Occasionally, bad judgment, carelessness, alcohol or drug addiction, or mental disturbance may create a state of affairs which cannot be ignored. A case of this kind must be brought under control promptly and decisively in the interest of the patient, the hospital, the physician himself, and the medical profession.

When the individual involved happens to be a prominent person, a close friend, a beloved teacher, or a real "prima donna," the situation becomes exceedingly delicate and sensitive. Curtailment, restriction, or withdrawal of the medical or surgical privileges of any physician is always a serious matter and must not be con-

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THOMAS J. KINSELLA *is a specialist in thoracic surgery in Minneapolis.*

sidered except for grave provocation. However, failure to take proper action when circumstances warrant it would appear to condone irregularities and to invite further trouble. Should politics, greed, fear, timidity, or a number of other factors enter the picture, tragedy may follow tragedy before the proper solution is finally found.

Many of the problems encountered in a situation of this kind are well illustrated in the recently released English translation of Jurgen Thorwald's fascinating book, "The Dismissal."*

Anyone who has served on a medical society ethics or censor committee or on the surgical privilege committee of a large hospital can fully appreciate the problem which confronted the medical, hospital, and civil authorities of East Berlin following World War II.

Herr Geheimrat Ferdinand Sauerbruch, master surgeon, internationally famous scientist, teacher, author, and pioneer in chest surgery, had reached the age of seventy. Always a supreme egotist, arrogant and domineering, a tyrant in his own domain, intolerant of others, possessed of a violent temper, heedless of his inferiors, he was, in spite of these failings, respected and admired for his ability, his accomplishments, and his reputation. Although physically well preserved, robust, and apparently alert, he was but a shell of his former self—a shell which for some time concealed the ravages of cerebral arteriosclerosis. The course of this disease seriously impaired certain higher functions and also served to exaggerate some of his unfortunate characteristics.

Unaware of the changes that were occurring, Sauerbruch was subject to transitory spells of aberration, momentary amnesia, and a gradual loss of his sense of aseptic surgical principles and judgment, accompanied by an increasing hostility approaching paranoia. Although numerous tragedies followed and were documented, no action was taken by officials for three or four years. This was due to a number of reasons. First, Sauerbruch was an international figure, world famous and probably the most illustrious surgeon in all of Europe. Trained under Von Mikulicz, he was the professor and chief of the Charité Clinic. He was one of the pioneers in chest surgery, with many "firsts" to his credit. These included the development of the negative pressure chamber which made intrathoracic surgery possible, the development of thoracoplasty for the treatment of pulmonary tuberculosis, the invention of a mechanical hand to be activated by residual muscles, successful lobectomies for bronchiectasis, resection of the lung for carcinoma, and successful excision of an aneurysm of the right ventricle. He was respected by many and, if some did not admire him, yet no one wished to harm him.

Always intolerant of any interference, even in his normal years, and possessed of a violent temper, he later developed such towering rages that everyone feared to cross him. His assistant and associates dared not bring his errors to his attention or to take corrective measures afterward.

After the war, he was called before the Allies' denazification court for he had been named state councilor by Goering, was a brigadier general in the medical corps, had received the Knights Cross and the War Merit Cross for his war services, had served on the Reich's Research Council, and received Hitler's national prize. He had striven desperately though vainly to save Heydrich, who died six days after the bombing of his car by Czech parachutists at Lidice. Nevertheless, he so resented being called before the tribunal that he flew into one of his towering rages, blasted the court and every one concerned with it, got away with it, and was cleared.

His reputation and prestige brought so many patients to the hospital and the clinics that the local administration and the government felt that his name and prestige were needed during the postwar period as an aid in rebuilding of East Berlin medical facilities.

Ample documented evidence was available that he was no longer himself or the master surgeon of former years. As a disciple of Von Mikulicz, he had been a staunch advocate of strict asepsis and surgical technic and, earlier, had first resisted the use of sulfa drugs and, later, penicillin because he felt that dependence upon them would ruin good surgical technic. With advancing years and deterioration, he lost much of his sense of surgical asepsis. This is illustrated by two glaring examples, the rough enucleation of a brain tumor with his bare unwashed hands and the excision of a meningocele from a child after which he sutured the wound with an unsterile needle and thread from an adjacent sewing basket and reaped the inevitable bad results.

Transitory bouts of amnesia (or blackouts) entered into the picture to add additional tragedies, such as his performance of a simple herniorrhaphy with injury to the femoral artery inadequately controlled and a gastric resection for tumor in a young patient but without re-establishing gastrointestinal continuity. Both had fatal results. Later, as hospital facilities were denied him, he even performed operations of some magnitude in his own home, using inadequate equipment, anesthesia, or aseptic technique.

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*The Dismissal by Jurgen Thorwald, 1962, American edition, Pantheon Books, Random House, 333 Sixth Avenue, New York, New York.

Even after the formerly available major hospital facilities were denied him, private clinics vied for him and his services. They were lured by the magic of his name in the hope that it would draw patients to their facilities. Even with such glaring examples before them, local medical and political authorities were slow to act. Three to four years elapsed before definitive action was taken.

What a pity that many a famous man is remembered by a younger generation not as the giant that he was in his prime or for the great things that he accomplished but rather as a distorted shadow of his former self or for some of the vagaries of his dotage. So it was with Ferdinand Sauerbruch. It is hoped that the world will forget and forgive his many eccentricities, his fiery temper, his apparent callousness at times, and the tragedies of his last five years and will remember his courage, skill, pioneering spirit, and original developments in the field of surgery. Uncounted thousands of people throughout the world have benefited from his many contributions.

RENAL JUXTAGLOMERULAR CELLS play some part in erythropoietic activity but are probably not the source of erythropoietin. Erythropoietic activity of rat kidneys is greatest when the granularity of the juxtaglomerular apparatus is increased. Reduction of granularity below normal, however, does not produce a corresponding decrease in erythropoietic activity. Juxtaglomerular granularity was increased by feeding rats low-sodium diets and decreased by administration of deoxycorticosterone trimethylacetate or by clipping a renal artery to induce hypertension. Erythropoietic activity was determined by hematocrit readings and red-cell uptake of Fe^{59} in healthy rats after injection of kidney extracts from the experimental animals. Extracts from animals fed low-sodium diets increased both measurements greatly. In rats given extracts from DOC-treated or hypertensive animals, hematocrit readings and Fe^{59} uptake were little different from those in control animals.

BEN GOLDFARB and LOUIS TOBIAN: Relationship of erythropoietin to renal juxtaglomerular cells. Proc. Soc. exp. Biol. (N.Y.) 112:65-69, 1963.

POSTOPERATIVE ARRHYTHMIAS occur in children only after atriotomy or ventriculotomy and vary in severity directly with the size of septal defect, duration of cardiac arrest or pump run, and to a lesser extent, with the use of operative patches. Arrhythmias are especially common in cyanotic patients with tetralogy of Fallot or ventricular septal defects with pulmonary hypertension. Arrhythmias such as nodal rhythm tend to be transitory, whereas those that occur after closure of ventricular septal defect are more likely to be permanent, probably as a result of surgical trauma to the conductive bundle. Favorable prognosis is indicated by occasional ventricular capture with relative independence of atria and ventricles immediately after operation; premature ventricular beats indicate increased ventricular irritability and greater risk.

GERARDO GOMEZ, FERNANDO GONZALEZ, PAUL ADAMS, JR., and RAY C. ANDERSON: Electrocardiographic findings after open-heart surgery in children. Amer. Heart J. 64:730-738, 1962.

H. Milton Berg, M.D.

LEO G. RIGLER, M.D.
Los Angeles

PHYSICIANS in the upper Midwest area should be greatly heartened by the many honors which have come to their colleagues. The year 1961 was a particularly unusual one in that 2 physicians, both from Bismarck, North Dakota, were elevated to 2 of the highest offices which can be conferred upon a physician in this country. The first of these, of course, is Dr. Leonard W. Larson who served as president of the American Medical Association. The second is Dr. H. Milton Berg, president of the Radiological Society of North America. That such honors should come to 2 men from a relatively small community in one of the least populated states of the Union—North Dakota—is a tribute to the opportunity which still exists in these United States.

Dr. H. Milton Berg was born on February 27, 1902, in Wyndmere, North Dakota. He received his primary and secondary education in North Dakota, graduating from high school in Fargo in 1919. His entire college career was spent at the University of Minnesota, where he received the bachelor of science degree in June 1923, the bachelor of medicine degree in December 1924, and his doctor of medicine degree in December 1925. Together with many graduates of the University of Minnesota, Dr. Berg took his internship at the Minneapolis General Hospital. He spent eighteen months there, becoming a senior intern in January 1925 and remaining until January 1926. It was during this time that he came under the influence of the author, who was then chief of the Department of Radiology at General Hospital. Dr. Berg developed an interest in this field, an interest which was to govern his future life activity. Dr. Berg was so intent on learning something of radiology during his internship that he had a pact with one of the other interns who would take care of his service during certain periods so that he could spend time in the X-ray Department. In turn, he sacrificed all of his free evenings and afternoons in order to compensate his colleague by taking care of his service. He was an assiduous and persistent student and carried the entire load of his internship, as well as the work he did in the Radiology Department, with complete equanimity.

Following his internship, he practiced internal medicine and radiology with a small clinic at Jamestown, North Dakota, until July 1928. At that time he was determined to get some additional training in radiology and to devote himself to this field. With this in mind, he went to the University of Michigan, where he spent a considerable period of time with the late Dr. Preston Hickey, and he then returned to Minneapolis to work with Dr. K. W. Stenstrom and the author who, by this time, was chief of the department at the University of Minnesota. In 1929 he moved to Bismarck, North Dakota, becoming chief of the Department of Radiology at the Quain and Ramstad Clinic and at the Bismarck Hospital. The clinic, which had been founded in 1902, had developed into an important factor in the medical practice of the upper Midwest but had not yet expanded to its present

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LEO G. RIGLER *is executive director, Cedars of Lebanon Hospital, Los Angeles.*

position. It was here he came in contact with Dr. Leonard Larson and the many other members of the clinic who exerted a profound influence on his future activities.

In December 1925, he married Alberta Noreen Kaiser who has been a great and willing helpmate throughout his entire career. They have had 2 sons, one of whom was lost to them recently as a result of a tragic accident. The other, Dr. Roger Berg, is also a radiologist.

In 1936, feeling the need for further study, he and his wife went abroad and spent a large part of the year in Stockholm. He made his contacts with the pre-eminent group of Swedish radiologists and has been closely associated with them ever since. Studying both at the Caroline Institute and the Radiumhemmet, he was able to perfect to a considerable degree his own skill in the field of radiology. In addition, they visited the foremost European radiologic centers in Oslo, Berlin, Munich, Leipzig, Paris, London, Edinburgh, and Manchester.

Dr. and Mrs. Berg repeated this visit in 1948, renewing their contacts and personal acquaintanceships with the radiologists of Sweden, Norway, and England.

Dr. Berg has devoted his enormous energy and unstinting efforts to the advancement of medicine, particularly radiology. As a result, he has been honored with many offices in the various societies with which he has been associated. He has been president of the North Dakota Radiological Society, the Minnesota Radiological Society, the Rocky Mountain Radiological Society, and the Sixth District Medical Society. He was elected to the Board of Directors of the Radiological Society of North America in 1955, and he served on that board with great distinction until his selection as president-elect in December 1959. He took office as president of the Society at the meeting in Cincinnati on December 8, 1960. That year the Society, under his guidance, attained a high-water mark in its activities. The annual program which he arranged proved to be one of the best in the history of the organization.

In addition to this high office, Dr. Berg maintains a considerable interest in many other societies as an officer or director and was recently awarded a plaque by the Rocky Mountain Radiological Society in recognition of his outstanding contributions to radiological medicine.

His interest in public health and community measures is unbounded, and he has devoted himself extensively to the elevation and advancement of medicine, particularly that of radiology. When the miniature film chest survey program was proposed in North Dakota, he undertook most enthusiastically and energetically to put it into effect. He arranged with the North Dakota State Health Department and Medical Association for the interpretation of all these films by members of the North Dakota Radiological Society, without any personal gain to any of them. Funds received from this were placed in the treasury of the Radiological Society and have been used to bring speakers to the state medical meetings. Furthermore, with the balance of these funds, he helped initiate a loan fund for needy medical students at the University of North Dakota Medical School. A splendid organizer, Dr. Berg has always been given the task of arranging meetings, building up the organization of the many societies to which he belongs. In addition, he has been most active in his local civic, religious, and social organizations.

During the course of his radiologic work at the Quain and Ramstad Clinic, he undertook a residency program. For a time this was associated with the Department of Radiology at the University of Minnesota, and he was on the staff as assistant professor for a number of years. He has been an excellent teacher and also has made substantial contributions to scientific literature. He has been an active participant in all radiologic meetings, contributing a great deal of common sense and wisdom to the proceedings.

Dr. Berg is indeed fortunate in having one of his sons follow in his footsteps. Dr. Roger M. Berg is associated with him in the Department of Radiology at the Quain and Ramstad Clinic in Bismarck. He has continued as chief of this department, as well as at the Bismarck and Saint Alexius hospitals.

An enthusiastic hunter, fisherman, horseman, and nature lover, he willingly shares his opportunities and hobbies with his family and friends. University of Minnesota lecturers or teachers who participated in the continuation courses and medical visitors to the state of North Dakota had standing invitations to hunt or fish under his guidance. Many an Easterner has been initiated into the mysteries of outdoor life in the Dakotas by Dr. Berg. His guests will attest to his hospitality and his facility in outdoor sports.

All radiologists are agreed that the presidency of the Radiological Society of North America was in good, steady, very well organized hands when he was in office. The Society, under his direction, took a straight and upward course. His fellow practitioners of Minnesota and the Dakotas may well be proud of their distinguished colleague, Dr. H. Milton Berg.

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Book Reviews . . .

Handbook of Pediatrics

HENRY K. SILVER, M.D., C. HENRY KEMPE, M.D., *and* HENRY B. BRUYN, M.D., *fifth edition, 1693. Los Altos, California: Lange Medical Publications. 602 pages. Illustrated. $4.00.*

As in previous editions of this Handbook of Pediatrics, a wealth of valuable information is presented in a compact, easily available form. There are 602 pages of small but distinct print, 4 by 7 inches in size, with pliable plastic cover, which fits easily into a hospital coat.

The concise presentation of the various aspects of pediatrics, together with the frequent use of tables and summaries, makes this handbook particularly useful for medical students and house staffs as well for practicing pediatricians and general practitioners. The authors do not intend it as a substitute for more complete textbooks and references but as a supplement to them.

The new fifth edition follows the fourth edition by only two years. Nevertheless, one may see that the book has been completely worked over, with a considerable number of minor revisions and several rather major changes.

My only disagreement with a statement in the book is at the beginning of chapter 2, which states that during most acute illnesses a child may be allowed to establish his own limits of activity, since efforts to enforce bed rest often do more harm than good. While many pediatricians may agree with this, my own feeling is that children can be trained to stay in bed when ill if parents are consistent and firm in their handling of this problem. After a few fruitless or painful attempts to get out of bed, most normal children cheerfully accept the verdict of parents and physician and rest and play quietly without the added strain of undue physical activity. This is a minor point, to be sure, and in no way detracts from the value of the handbook.

L. G. PRAY, M.D.
Fargo

Sarcomas of the Brain

JAMES W. KERNOHAN, M.D., *and* ALFRED UIHLEIN, M.D., *1962. Springfield, Illinois: Charles C Thomas. 192 pages. Illustrated. $8.00.*

This book is a summary of the experiences these outstanding authors have had in dealing with 241 primary sarcomas of the brain.

These relatively little-known malignancies constitute about 3 per cent of intracranial neoplasms, and heretofore there has been no adequate reference work to which pathologist or clinician could turn for help in classification and behavior of these neoplasms. The material is presented in a very easy-to-read and logical fashion and is profusely illustrated with excellent photomicrographs

(Continued on page 18A)

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BOOK REVIEWS

(Continued from page 16A)

as well as a few excellent gross photographs. There are also excellent illustrative tables and charts summarizing frequency, age distributions, and locations of the six morphologic types of sarcoma.

The book will be of primary interest to pathologists, neurosurgeons, and neurologists as well as to any physician interested in intracranial neoplasms. It is a must for any well-rounded library.

DONALD J. NOLLET, M.D.
Hibbing, Minnesota

Sixty-Five Plus: The Joy and Challenge of the Years of Retirement

CLARENCE B. RANDALL, *1963. Boston: Little, Brown & Co. 210 pages. $4.75.*

This is the delightful autobiography of the retirement years of Clarence Randall, the former president of the Inland Steel Company, in which he tells why and how "My years after sixty-five have brought me the deepest satisfaction of my entire life." This he attributes to adequate preparation earlier in life, not by just doing the job well for which he was paid and not by just developing a hobby to ride after retirement but, more significantly, by undertaking more extracurricular responsibilities in community, church, hospital, political, and cultural affairs. He emphasizes and describes the fine art of making and holding friends, of using them or of being available to them.

Of the many opportunities for employment that awaited Mr. Randall's retirement, he chose to work with President Eisenhower in the White House as one of his executive assistants having to do with foreign economic policy. Mr. Randall was well prepared for the challenge of this entirely new work, which necessitated in part much interesting foreign travel and boning up on his reading and conversational French. Fascinating vignettes of recent history are related by the articulate author, who spices his story with outstanding personalities, unusual places he has gleaned for travel and dining, hideaways for relaxation, worthwhile books to read, and other pearls to add to the enjoyment of one's retirement.

The chapter "In Defense of Bird Watching" will thrill bird watchers, and older readers will appreciate his chapter "On the Subject of Ancestors," which is a rare treat. The tender passages of tribute to his wife culminate in his preferred epitaph: "Clarence Randall, He Married Emily."

Physicians as well as executives will be fascinated by the vivid description of the author's heart attack and the events that followed, another example of a productive, well-paced though active life after a serious heart attack.

The chapter on public speaking, of which Clarence Randall is a master, contains much wisdom and many helpful suggestions, but he is at his best when relating the almost hilarious descriptions of the reactions of friends to his newly written book. Book reviewers do not escape his wit either.

This is a book of ideas and accomplishments—to read, enjoy, and pass on to your wife and maturing children and to recommend to your friends in the hope that some of the wisdom, wit, and charm will rub off on them. It will be wistful reading to the retired executive who has not planned his retirement well.

LOUIS E. PRICKMAN, M.D.
Rochester, Minnesota

News Briefs . . .

North Dakota

DR. ROBERT J. OLSON, a native of Wildrose and Carpio, has joined Mercy and Good Samaritan hospitals, Williston, as head of the departments of radiology. He also will serve as a consultant in radiology. Dr. Olson received his medical degree from the University of Minnesota in 1958 and was certified by the American Board of Radiology in radiology and nuclear medicine in June 1962. He was with the Quain and Ramstad Clinic, Bismarck, for two years.

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DR. JERRY WOLF has joined the staff of the Bottineau Clinic after completing his internship at Nebraska Methodist Hospital, Omaha. Dr. Wolf, a native of Beulah, received his medical degree from the University of Nebraska.

° ° ° °

DR. GERD FISCHER, neurosurgeon with the Quain and Ramstad Clinic, Bismarck, has been elected to active membership in the Harvey Cushing Society. Dr. Fischer is a member of the staffs of Bismarck and St. Alexius hospitals.

° ° ° °

DR. O. VICTOR LINDELOW, Bismarck, has been named president of the North Dakota State Heart Association. He is an internist associated with the Missouri Valley Clinic of Bismarck. Named president-elect was Dr. Thomas E. Pederson, Jamestown.

° ° ° °

DR. ERNST SCHMIDHOFER resigned June 1 as superintendent of Jamestown State Hospital, a position he had held since July 1961. He now is deputy commissioner of professional standards and services in the New York Department of Mental Hygiene.

Minnesota

DR. J. GORDON MILLICHAP, a member of the Section of Pediatrics at the Mayo Clinic, Rochester, has accepted the position of professor of neurology and pediatrics at Northwestern University Medical School. He also will be neurologist and head of the division of pediatric neurology at the Children's Memorial Hospital in Chicago. Dr. Millichap joined the Clinic as a consultant in pediatric neurology in April 1960 and was appointed associate professor of pediatric neurology in the Mayo Foundation of the University of Minnesota Graduate School in 1962. In April, he was elected chairman of the Section of Child Neurology of the American Academy of Neurology. At the Clinic Dr. Millichap developed and di-

(Continued on page 20A)

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(Continued on page 19A)

rected a fellowship training program in pediatric neurology. He was recently awarded a grant from the National Institute of Neurological Diseases and Blindness for research in convulsive disorders of children.

° ° ° °

THE UNIVERSITY OF MINNESOTA MEDICAL SCHOOL has received a grant of $21,400 from the American Medical Association Education and Research Foundation. The grant represents gifts to the university from Minnesota doctors. Roland Roy Larter, a freshman at the medical school, received the 1963 Rural Medical Scholarship awarded annually by the state doctors. Larter, a native of Lancaster, will receive $1,000 a year for four years with the provision that he practice for at least five years in a rural Minnesota community.

° ° ° °

DR. GILBERT S. WHEELER, a radiologist, has been appointed to the staff of the Ely-Bloomenson Community Hospital. He is a member of the Canadian Medical Society and the Canadian Association of Radiologists; he is certified by the American Board of Radiology and the Royal College of Physicians and Surgeons of Canada.

° ° ° °

DR. E. C. EMERSON, St. Paul, was elected president of the American College of Angiology at the organization's annual meeting in connection with the American Medical Association convention. Dr. Emerson is director of the peripheral vascular clinic at University Hospitals, University of Minnesota.

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DR. WESLEY W. SPINK, University of Minnesota professor of medicine and president of the American College of Physicians, has been made an honorary fellow of the Royal Australasian College of Physicians. The honor was conferred at a meeting of the College in Sydney, Australia, on June 3.

° ° ° °

DR. TURNER CAMP, Washington, D. C., has succeeded Dr. Edward Mandell as director of the St. Paul area medical office of the Veterans Administration. Dr. Mandell has been appointed director of the Minneapolis Veterans Administration Hospital, succeeding Dr. Henry L. Vogl who has been named staff physician at the St. Paul area medical office.

° ° ° °

DR. ARTHUR L. WEAVER of the Mayo Clinic, Rochester, has received a $1,000 Mead Johnson residency scholarship from the American College of Physicians.

° ° ° °

DR. CLYDE E. BLACKARD, for the past year assistant chief in urology at Minneapolis Veterans Administration Hospital, has joined the department of urology of Nicollet Clinic. Dr. Blackard received his medical degree from the University of Indiana in 1957 and served his residency in urology at Louisville Veterans Administration Hospital and University of Louisville Hospitals from

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1959 to 1962. He has been an instructor in urology at the University of Minnesota.

° ° ° °

MINNESOTA MEDICAL FOUNDATION scholarships of $500 each have been awarded to 16 entering freshman medical students at the University of Minnesota for the 1963-64 school year. The awards were granted on the basis of outstanding performance in premedical studies and on financial need. The recipients are among 150 students who will constitute the largest entering class in the school's history September 23. The Foundation is a nonprofit organization providing various types of private aid to the school.

° ° ° °

DR. FRANK H. KRUSEN has retired as president of the Sister Elizabeth Kenny Foundation of Minneapolis and senior consultant in physical medicine and rehabilitation of the Mayo Clinic. A world authority on physical medicine and rehabilitation, Dr. Krusen founded the Mayo Clinic Section of Physical Medicine and Rehabilitation in 1935 and headed it until 1958. He has been on leave from the Clinic since 1960. Dr. Krusen was born in Philadelphia June 26, 1898, received his medical degree from Jefferson Medical College in 1921, and practiced in various institutions in Philadelphia until 1935. He was appointed to the Mayo Foundation Graduate School, University of Minnesota, in 1936, and became a full professor in 1941. He has received every major honor in his field, many outside his specialty, and has been an officer in many medical organizations.

° ° ° °

DR. A. J. BARNETT has resigned as chief of medicine at Veterans Administration Hospital, St. Cloud, to open a private practice in Foley. Dr. Barnett was in private practice in Texas until he came to Minnesota and the VA Hospital position in 1960. He received his medical degree from Georgetown University, Washington, D. C., in 1950. Dr. Barnett is a native of New York City.

° ° ° °

DR. LOWELL BROWN, currently chief resident in surgery at Wayne County Hospital, Detroit, will join the Tyler Clinic, Tyler, in August. Dr. Brown received his medical degree from the University of Minnesota in 1958.

° ° ° °

DR. W. ALBERT SULLIVAN, JR., associate professor of surgery and director of the Department of Continuing Education, University of Minnesota, received the second annual Distinguished Teaching Award of the Minnesota Medical Foundation. The award, with a cash prize of $1,000, was given at the medical school's Recognition Day ceremony. Dr. Sullivan, a member of the teaching staff for fifteen years, was selected for the award by the student body and the foundation.

South Dakota

DR. R. G. MACDONALD, in practice with Dr. F. C. Totten at the Lemmon Clinic for five years, has accepted an appointment in the Department of Urology at the University of Manitoba, Winnipeg. Dr. MacDonald came to Lemmon from Gackle, N. D., in 1958.

(Continued on page 22A)

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NEWS BRIEFS

(Continued from page 21A)

DR. CARLYLE HARE has retired after more than fifty years as a general practitioner in Spearfish. In 1948 Dr. Hare was the South Dakota Medical Association's General Practitioner of the Year and first runner-up in the American Medical Association's national contest for title of Family Doctor of the Year. He attended South Dakota Medical School and received his medical degree from the University of Illinois. Dr. Hare started practice in Spearfish in 1911 and practiced there continuously except for military service during World War I.

Deaths . . .

DR. ANTON G. SANDERSON, 80, a practitioner in Minnesota for fifty-five years, died May 21 at the Lake Region Hospital, Fergus Falls. He had practiced in Ashby, Minnesota, since 1955.

* * * *

DR. EGBERT J. BORGESON, 69, former University of Minnesota Medical School faculty member and staff doctor at Swedish and St. Andrew's hospitals, Minneapolis, died May 30. He was a member of the American Medical Association, American College of Surgeons, Minnesota State Medical Association, Hennepin County Medical Society, and the Minnesota and American Academies of Ophthalmology and Otolaryngology.

* * * *

DR. HAROLD S. TRUEMAN, 64, a staff member of Northwestern Hospital, Minneapolis, for thirty-three years, died May 19. Dr. Trueman was chief of staff of the hospital in 1943 and 1960. He served on the board of trustees of Hennepin County Medical Society and was examining physician for the Minneapolis Fire Department. He was a native of Munising, Mich., and a graduate of Stanford University School of Medicine.

* * * *

DR. ERNEST T. F. RICHARDS, 79, Dellwood, White Bear Lake, died June 16 in Miller Hospital, St. Paul. Dr. Richards was an associate professor of medicine at the University of Minnesota from 1912 to 1952. During the first years of World War I he was acting head of University Hospitals until called to head the American medical unit from Harvard University for the remainder of the war. He was a graduate of McGill University, Montreal, and did postgraduate work at Harvard and Heidelberg universities.

* * * *

DR. HAROLD D. NAGEL, 65, in practice in Waconia for thirty years and founder of the Waconia hospital, died June 4. He had lived in Golden Valley, Minnesota, for nine years following his retirement ten years ago. Dr. Nagel was born in New Ulm, attended Hamline University and the University of Minnesota, and served as an army officer in World War I.

* * * *

DR. STEWART W. SHIMONEK, 61, an orthopedic surgeon in St. Paul before he entered the Navy twenty years ago, died May 30 in St. Mary's Hospital, Rochester. Dr. Shimonek retired earlier this year with the rank of captain in the Navy Medical Department. He had been living in Lovettsville, Virginia. Dr. Shimonek was the son of the late Dr. Anton Shimonek, also a surgeon.

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Articles and features to be found in the next issue of THE JOURNAL-LANCET

The presence of blood in the urine, whether microscopic or gross, is always considered abnormal and may be of great importance, according to James Oliver of Minneapolis, who writes on "The Investigation of Hematuria" in the continuing series on Urology for the Practitioner.

The causes of hematuria are numerous and many are of grave significance, according to Dr. Oliver, and to differentiate the serious from the relatively benign, a complete urologic investigation is mandatory. It has been wisely said that hematuria must always be considered serious until proved otherwise, and the author stresses that this statement should be heeded by all physicians, since it dictates the need of thorough investigation regardless of the type, amount, symptomatology, or duration of the hematuria.

In a second article from the urology series, William L. Parry and C. Benton Dawson of Oklahoma City, write on "Considerations of Urinary Tract Infection." The basic problem in management of urinary infections is to distinguish simple infections in normal urinary tracts from complicated infections in abnormal tracts.

The authors point out that organisms enter the urinary tracts by several routes and can cause transient symptoms such as many people experience during a lifetime. In a normal tract under any regime, and often without medical assistance, acute symptomatology even with severe inflammation usually clears within two weeks. By supportive measures and antimicrobial agents, physicians help patients become comfortable more quickly and the course of the disease is shorter.

Other articles planned for the October issue are:

- **Endometriosis of the Colon,** by Robert J. Olson, Bismarck.
- **Acute Poisoning from Overdose of Isoniazid,** by Helen Starke and Starks Williams, Kansas City, Missouri.
- **Surgical Aspects of Tuberculous Empyema in East Pakistan,** by W. A. Ansari, Dacca.
- **Lumbodorsal Fascia and Related Structures as Factors in Disability,** by Raymond J. Dittrich, Cambridge, Minnesota.

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Recent reports suggest... insulin and sulfonylureas may accelerate lipogenesis, fat accumulation, weight gain; thus appear to aggravate obesity in diabetics[1-5]...serum "insulin" levels are often elevated in obese diabetics[2,3,6]...DBI (phenformin HCl) reduces high blood sugars, lowers elevated "insulin" levels, tends to reduce body weight toward normal.[1,3,7-9]

DBI and DBI-TD (phenformin HCl), administered to ketoacidosis-resistant diabetics requiring hypoglycemic therapy: **A.** act to reduce high blood sugar without increasing fat synthesis or weight gain as insulin and sulfonylureas tend to do. **B.** do not increase already elevated endogenous insulin levels; may, indeed, act to restore more normal insulin levels. **C.** favor reduction of weight towards normal.

Insulin is still the essential hypoglycemic agent for the ketoacidosis-prone diabetic. However, in the ketoacidosis-resistant obese diabetic phenformin appears to be the hypoglycemic of choice to help avoid weight gain or reduce adiposity, a factor tending to make control more difficult and to increase the likelihood of complications.

Summary: Indicated in stable adult diabetes, sulfonylurea failures and unstable diabetes. Gastrointestinal side effects occurring more often at higher dosage levels abate promptly upon dosage reduction or temporary withdrawal. Occasionally an insulin-dependent patient will show "starvation" ketosis (acetonuria without hyperglycemia) which must be differentiated from "insulin-lack" ketosis, and treated accordingly. Use with caution in severe liver disease. Not recommended without insulin in acute complications (acidosis, coma, infections, gangrene, surgery). See product brochure for full information.

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Bibliography: 1. Williams, R. H.: Textbook of Endocrinology, Ed. 3, Saunders, Philadelphia, 1962, p. 610. 2. Gordon, E. S.: Metabolism 11:819, 1962. 3. Grodsky, G. M. et al.: Metabolism 12:278, 1963. 4. Sadow, H. S.: Metabolism 12:333, 1963. 5. West, K. M. and Tophoj, E.: Metabolism 10:689, 1961. 6. Yalow, R. S. and Berson, S. A.: Diabetes 9:254, 1960. 7. Weller, C. et al.: Scientific Exhibit, A.M.A., June 1962. 8. Weller, C. et al.: Metabolism 11:1134, 1962. 9. Radding, R. S. et al.: Metabolism 11:404, 1962.

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FOREWORD

The current traffic of medical literature appearing in hundreds of journals has reached such overwhelming proportions that the average busy practitioner finds himself submerged in academic chaos, often unable to "sift the grain from the chaff." Scientific data are frequently presented on such a sophisticated level that only the medical statistician and the refined specialist in a given field can grasp what is being said. Indeed, not all such presentations are above reproach simply because they are dignified with such fetishes as "double-blind," "placebo control," and "statistical techniques."

Recently, Dr. Nathan S. Kline deplored the unwarranted use of "statistical jargon" which has brought about a state of affairs "in which the author of a straightforward clinical paper feels obligated to defend himself." While appropriate statistical methods are as requisite to basic medical research as mortar to brick construction, the average busy clinician is primarily interested in the conclusions of any qualified investigator, his reading time being too limited for analytical pursuits in all but the exceptional paper.

Moreover, too much emphasis is placed on the rare or the unusual rather than upon commonplace disorders which are not infrequently neglected in everyday practice. This stems, at least in part, from endless competition to publish something "original." Review articles are too few and, when they appear, tend to be too exhaustive. There are well-written articles on clinically inconsequential subjects, poorly-written articles on vital subjects and, unfortunately, sometimes poorly-written articles on inconsequential subjects. When there is a compulsion to wax esoteric and "burst upon the reader with so much specialized knowledge that the uninitiated are soon completely lost,"[1] the writer should yield to the sobering words of Will Rogers that "we are all ignorant but on different subjects."

Few "literary giants" exist in scientific medicine; yet, if one cannot emulate the style of William B. Bean, one can at least attempt to express himself lucidly with eloquent simplicity, avoiding that which confuses and stressing that which enlightens.

It is axiomatic that all medical science exists solely for the amelioration or cure of man's ills. In this era of too few doctors it is, therefore, imperative that the busy practitioner be constantly informed on the current status of diagnosis and treatment of the more common diseases and, of course, possess at least a working knowledge of the rarer diseases. In this regard general practice journals are often superior to sophisticated specialty journals, and the best articles submitted to the former are usually those written by nationally recognized authorities in their respective fields.

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[1] JENSEN, JULIUS: Modern Concepts in Medicine. St. Louis: C. V. Mosby Co., 1953.

It is for the above reasons that the following symposium on diabetes mellitus was conceived, organized, and integrated. Not only is diabetes one of the most common afflictions of man (increasing at an alarming rate), but the vast majority of diabetic patients are under the care of the generalist; hence Joslin's remark that "from the cradle to the grave the diabetic belongs to the general practitioner." Since no physician, regardless of his specialty, can evade contact with diabetic patients, a basic familiarity with this disease is requisite for all who practice medicine.

Newer concepts of the causation, pathologic physiology, and therapy of diabetes are somewhat revolutionary. Thus, the general physician must keep abreast of these advances if his patient is to be fully served. In this symposium nationally prominent authorities in the field of diabetes mellitus make a sincere attempt to fulfill this need in presenting concise, lucid, and basic expositions on the current status of this all-important malady. Each clinician is uniquely qualified to present the subject matter assigned, and all participants draw from a vast clinical experience. Since the general knowledge, experience, and skill in diabetes management is highly variable among clinicians in general, some aspects of this symposium will appear too basic and rudimentary to some and yet fulfill definite needs of others. While we have come a long way from the era during which one juvenile diabetic surreptitiously ate birdseed to allay the pangs of therapeutic starvation, many uncharted gaps remain in our knowledge.

The most significant change in the therapeutic spectrum of diabetes since the discovery of insulin is, of course, the introduction of oral sulfonylureas and phenformin, albeit insulin remains the champion in the therapeutic arena because it invariably succeeds whenever the oral hypoglycemic compounds fail. But, insulin is far from the ideal agent for the treatment of diabetes as evidenced by the shop-worn phrase "brittle diabetes." To date, no one has devised the equivalent of a built-in metabolic thermostat for insulin release in the diabetic subject, approaching the remarkable homeostasis of the intact organism. The complex problems of insulin-neutralizing antibodies, insulin antagonists, and "free" and "bound" insulin currently under study render the concept of absolute insulin deficiency anachronistic, especially since Bornstein and Lawrence demonstrated normal levels of biologic insulin activity in maturity onset diabetes. Unfortunately, none of these newer concepts, whether in hypothesis or fact, translates to the clinical level of improved therapy with insulin at this time.

As with any other chronic disease, the treatment of diabetes is subject to divergent views among different authorities. The best advice for the inexperienced therapist is to follow strictly the treatment plan of a recognized authority and adhere to these principles until more extensive patient exposure justifies his personal modifications.

In conclusion, it is hoped that the following presentations by an all-star cast will serve as a useful, informative, and therapeutic guide for the busy practitioner with limited experience in the present-day management of diabetic patients. A limited supply of bound reprints of the entire symposium will be available for those who desire a quick reference on the office desk. (Requests may be mailed to any of the contributors.)

E. A. HAUNZ, M.D.

E. A. HAUNZ *is professor and chairman, Department of Medicine, University of North Dakota School of Medicine, Grand Forks, North Dakota.*

Diabetes Detection in General Practice

THOMAS P. SHARKEY, M.D.

Dayton, Ohio

INCREASING INCIDENCE OF DIABETES

NEWLY REVISED FIGURES of the American Diabetes Association[1] indicate that there are now 3,000,000 people in the United States with diabetes, 1,600,000 of whom are known to have the condition. The undiagnosed number 1,400,000.

Since Wilkerson and Krall[2] completed the first comprehensive diabetes prevalence study in 1947, many surveys among various population groups have been carried out, particularly in the United States. Since 1948 the American Diabetes Association has helped to direct and assist in diabetes detection programs throughout the country, and while the impetus has been initiated each November, year-around diabetes detection has been encouraged.

From this vast experience it has become apparent that the true incidence of diabetes has been underestimated. It may be stated that 1 person in 60 in this country has diabetes, that there were approximately 5,250,000 people with potential diabetes as of 1962, and that new annual (known) cases number 75,000. The majority of cases of diabetes occur in individuals past 40 years of age. Only about 1 in 2,500 children (age group 0-15) has diabetes.[3]

FACTORS ASSOCIATED WITH DIABETES

Heredity. Since diabetes is considered a hereditary condition, a family history of diabetes should stimulate a thorough investigation of all members of the patient's family. Studies of the histories of diabetic patients have revealed an incidence of diabetes ranging from 18 to 57 per cent. White and Joslin[3] reported an incidence of heredity of 41 per cent in 1,619 patients treated during 1941 and of 49 per cent for those with onset of diabetes under 15 years of age.

Obesity. Heredity determines the individual's susceptibility to diabetes and, while a number of factors may precipitate the disorder, obesity is by far the most common in adults. Obesity is not an important precipitating factor of juvenile diabetes. Only 5 per cent of White's[3] diabetic children had exceeded their expected weight for age at the onset of diabetes. According to Duncan,[4] approximately 80 per cent of all diabetic patients are overweight or give a history of having been so. Joslin and associates[5] found, in statistical analysis of 4,596 patients, that obesity was present in 78.5 per cent of the males and 83.3 per cent of the females.

Prediabetes. At the present time it is not possible to identify the individual genetically susceptible to diabetes before he exhibits diminished tolerance for carbohydrate under certain standard conditions. Steinberg[6] estimated that some 60 to 90 per cent of those who are genetically liable to diabetes are not recognized by present routine methods of examination. The term "prediabetes" is defined by Conn and Fajans[7] as that period when one "can detect an early abnormality, which precedes and is not dependent upon insufficient insulin activity." They emphasize that today there are no biochemical tests that can identify with certainty an individual believed to be in the prediabetic state. The term "prediabetes" should not be used as a clinical diagnosis and is not synonymous with such terms as "latent diabetes" or "potential diabetes," where slight diminution of carbohydrate tolerance may be found following glucose loading tests.

Prediabetes and pregnancy. Certain observations during the course of pregnancy have pointed the finger of suspicion of prediabetes toward an apparently normal individual. Certain facts elucidated from the history may suggest that more than the usual standard diagnostic tests be employed to rule out diabetes.

According to White,[3] if a noninterventional and nonprotective program is followed, the perinatal loss by intrauterine, intrapartum, and neonatal deaths is 45 per cent as compared with a loss of 3 per cent in normal obstetrical experience. Previable losses are 20 per cent as compared with a previable loss of 10 per cent in the normal. The incidence of toxemia is 33 per cent as compared with 3 per cent in normal obstetrical experience. Some degree of hydramnios is present in those with diabetes and absent in the

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THOMAS P. SHARKEY *is assistant clinical professor of medicine, The Ohio State University College of Medicine, Columbus, and is president of the American Diabetes Association, Inc.*

normal except when twin pregnancies or multiple births occur. Congenital anomalies were noted in 80 per cent of White's[3] series compared with the expected incidence of 1.8 per cent. A history of these various abnormalities should direct the physician's attention to the possibility of maternal diabetes or prediabetes.

It has been known for years that most often the birth weight of an infant born to a diabetic mother exceeds the expected normal weight for a similar period of gestation. Retrospective studies now indicate that the apparently normal mother who delivers an infant weighing 10 to 11 lb. is highly susceptible to diabetes, 77 per cent eventually developing the disorder within an average period of twenty-four years.[8]

The importance of the earliest possible recognition of diabetes is accepted, so that its progression to severe stages and the development of acute complications can be prevented or delayed. It is further hoped that by early recognition and treatment the degenerative vascular and neuropathic lesions may be prevented or their appearance delayed.

URINE TESTING

It is valueless to rely on the fasting blood sugar level or the fasting urinalysis for the early diagnosis of diabetes. Usually glucosuria is the result of hyperglycemia, and, except in certain rare conditions, one will not expect to find glucosuria in diabetes until the renal threshold for glucose has been reached or exceeded. Glucosuria will also occur as the blood sugar is falling from the renal threshold level following the administration of glucose. Excretion of glucose in the urine depends on the concentration of glucose in the afferent glomerular arteriole, the rate of glomerular filtration, and the rate of renal tubular reabsorption of filtered glucose. The renal threshold for glucose varies in different individuals, but it has been reported to vary between 140 and 190 mg. per 100 ml. for whole blood (venous) in the majority of people, although measurements by arterial blood (capillary) are more accurate and may average 200 mg. per 100 ml. (true glucose).

The Diabetes Detection Program of the American Diabetes Association has been based primarily upon examination of the urine postprandially with a recommendation of a follow-up of all positive urines by blood sugar determinations. The large-scale surveys suggest that on random sampling of the population the incidence of glycosuria is 3.5 to 4.5 per cent. If the incidence of both known and unknown diabetes is 2 per cent of the population[6] it becomes apparent that, while the presence of glycosuria is strongly suggestive of diabetes, all individuals with glycosuria do not have diabetes. It may also be said that a negative test for glycosuria does not, by any means, exclude diabetes.

With the testing materials accessible today, every physician can make a urine test. A good screening procedure is to have the patient report two hours after a breakfast of approximately 100 gm. of carbohydrate, consisting of 6 oz. of orange juice, three-fourths cup of cereal, 8 oz. of milk, and 3 slices of bread with coffee or tea sweetened with 1 tbsp. of sugar. The patient should not void before the two-hour specimen is collected in a chemically clean container.

Nonspecific urine testing methods. A. Benedict's qualitative solution and the Clinitest reagent depend upon the reduction of copper sulphate to cuprous oxide in the presence of sugar. Benedict's solution is the least expensive and most stable of the reagents and materials used in testing for glycosuria.

A modification of the Benedict's test, the Clinitest method has achieved popularity because of the rapidity with which the test can be done and the fact that no external source of heat is required.

The copper used in these methods is not specific for glucose, and false positive tests may occur from reducing substances other than glucose. The Clinitest reagent is less sensitive in this respect.[9]

B. The Galatest method depends upon the reduction of bismuth in the presence of sugar. Certain nonglucose-reducing substances will also reduce bismuth and give a false positive reaction.[10]

Specific tests for glucose. The simplest method for the detection of glucose in the urine is with the use of one of the glucose oxidase–impregnated paper strips. The indicator papers are impregnated with glucose oxidase, peroxidase, and orthotolidine. Glucose oxidase reacts with beta-glucose and atmospheric oxygen to produce gluconic acid and hydrogen peroxide. In the presence of peroxidase, the hydrogen peroxide formed oxidizes orthotolidine to produce shades of blue or purple in the presence of glucose. These methods are specific for glucose and are not affected by reducing substances and sugars other than glucose which give positive reactions with copper reagents. The common materials in use today are Tes-Tape and Clinistix. Uristix and Combistix not only test for glucose but also for proteinuria and for proteinuria plus urinary pH, respectively.

Comparison of urine testing methods. A study of 1,000 urine specimens was made by O'Sullivan and associates[11] to compare the accuracy of Benedict's solution, Clinitest, Tes-Tape, Clinistix, and Uristix in determining glucosuria. The sensitivity of all the tests compared favorably except Clinitest, which rated some 8 per cent of the positive urine specimens false-negative. Specificity was found to be greatest with Clinitest and lowest with Benedict's solution. Of the glucose oxidase methods, Tes-Tape showed the highest specificity.

The application of glucose oxidase strips to the skin surface as a method for diabetes detection is not recommended to the exclusion of other tests.

Following up positive tests. Needless to say, all individuals showing glycosuria should have a postprandial or a postglucose load blood sugar determination. Glycosuria may appear transitorily during periods of stress such as surgery, trauma, infection, emotional conflicts, pregnancy and the like. The history of glycosuria even on one occasion should always make one suspicious of latent or subclinical diabetes. Considerable glycosuria may be found in renal glycosuria and pregnancy with normal blood sugar values, and an error in diagnosis can be made if blood sugar determinations are not performed.

BLOOD SUGAR DETERMINATIONS

Certain fundamental requirements should be adhered to in order to insure as physiologically accurate a blood sugar test as possible in the individual patient. It is ideal to have the patient ingest a standard preparatory diet of 300 gm. of carbohydrate daily for at least three days prior to the test. At least a normal diet should be employed for three days or preferably longer prior to the test. Carbohydrate restriction should be avoided before the test, otherwise false elevation of the blood sugar may be induced. Patients taking steroids or any drugs of the thiazide group may show a hyperglycemic response.

*Two-hour postprandial blood sugar analyses.** For screening purposes the patient is asked to report to the office after an overnight fast, having eaten at least a normal diet for three days preceding the test or, preferably, a diet containing 300 gm. of carbohydrate daily for this period. The most satisfactory test procedure is to administer glucose dissolved in 400 cc. of water flavored with lemon juice, 1.75 gm. per kilogram of ideal body weight as calculated from the subject's height and age. If the glucose solution is refrigerated overnight and administered cold it is less likely to produce nausea. If the administration of glucose is not feasible, a breakfast is prescribed containing approximately 100 gm. of carbohydrate, similar to that used for the postprandial urine test. There has been some criticism of the test meal, because of the variation in the rate of absorption of the various foods and the length of eating time required by different individuals. As a result of a mass screening detection program in St. Louis, Fox and associates[12] found some discrepancy in the "diagnostic" reliability of postprandial blood sugar determinations as compared with those following glucose tolerance tests. The venous blood sugar is taken two hours after the glucose load or the beginning of the breakfast meal, and a simultaneous urinalysis is done for comparative results. If the meal is used it should be consumed within thirty minutes.

A blood sugar level above 140 mg. per 100 ml. (Somogyi-Nelson) or 160 mg. per 100 ml. (Folin-Wu) is usually indicative of diabetes providing, of course, that such conditions as carbohydrate restriction, Cushing's syndrome, acromegaly, pheochromocytoma, liver disease, or hyperthyroidism and the like are not present.† Blood sugar levels from 110 mg. per 100 ml. to 140 mg. per 100 ml. are suggestive of diabetes, and the test should be repeated in several weeks under like conditions. If similar results are obtained, a glucose tolerance test should be done. Many investigators use a blood sugar level of 120 mg. per 100 ml. or more two hours postprandially as indicating diabetes. For screening purposes the higher level of 140 mg. per 100 ml. (Somogyi-Nelson) for a single blood sugar determination will reduce the number of false-positives. If the glucose tolerance test is done on the individual screening between levels of 110 and 140 mg. per 100 ml., fewer people with diabetes will be missed. According to Remein and Wilkerson[13] the two-hour postprandial blood sugar test will screen out more than 1.5 cases of diabetes as compared with the two-hour postprandial urine sugar method of equal specificity.

Collection of blood. If the blood specimen must be sent to a laboratory for an analysis or mailed out of the city, it is important to use an anticoagulant, which inhibits glycolysis and helps to preserve the sugar content of the blood. The blood is best placed in a 1-oz. wide-mouthed bottle containing a small amount of a mixture of 5 parts of a neutral salt of sodium fluoride to 2 parts of powdered potassium oxalate in the approximate amount of 7 mg. of the mixture per cubic centimeter of blood, according to Marble.[3] Blood which has been mixed with sodium fluoride will retain its sugar content at room temperature for at least several hours and for several days if refrigerated. According to Kantor and Wilkerson[14] blood sugar levels were maintained within 10 per cent of the original value up to one hundred forty-four hours in almost all transported blood specimens using a fluoride salt as a preservative.

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*The term "postprandial" is used here to indicate a blood sugar determination or urinalysis following the ingestion of food.

†It is acknowledged that a few individuals with the two-hour blood sugar level below 110 mg. per 100 ml. will prove to have diabetes.

To insure accuracy, venous blood sugar analyses should be performed by one of the "true glucose" methods such as the Somogyi-Nelson technique to avoid measuring nonglucose-reducing substances, which may lead to a false diagnosis of diabetes, especially when borderline values are reported. Mosenthal and Barry[15] and Haunz and Keranen[16] found that in 38 and 39 per cent, respectively, the values of these substances were above the level of 30 mg. per 100 ml.

In a recent study by Wilkerson and associates[17] of 4,584 specimens of venous whole blood analyzed by both the Folin-Wu and the Somogyi-Nelson procedures, the mean difference between values obtained by these two methods was 20.4 mg. per 100 ml.

By subtracting a constant of 20 mg. per 100 ml. from each Folin-Wu determination in the glucose tolerance test and comparing it with results analyzed by the Somogyi-Nelson criterion for diabetes, it was found that 38 persons of a total of 573 (6.6 per cent) would have been misclassified due to the transposition.

Venous blood should be used, since arterial (capillary) blood shows wide variances of blood sugar levels, averaging 20 to 50 mg. or more higher than venous blood after a meal, according to Marble.[3]

Glucose tolerance test. Repeated fasting blood sugar values in excess of 120 mg. per 100 ml. (Somogyi-Nelson) or 140 mg. per 100 ml. (Folin-Wu) are indicative of diabetes and a glucose tolerance test is unnecessary. A glucose tolerance test is indicated in the individual who has had several two-hour postprandial or postglucose-load blood sugar values in the range of 110 to 140 mg. per 100 ml. (true glucose).

The same pretest dietary recommendations should be adhered to as were recommended for the screening method. The individual should report to the office after an overnight fast and be given 1.75 gm. of glucose per kilogram of ideal body weight as calculated from the subject's height and age.

It is impossible to obtain unanimity of opinion among investigators as to what constitutes the smallest impairment of carbohydrate tolerance that can justify a confident opinion that diabetes mellitus definitely is present. Some place more emphasis on the peak to which the blood sugar rises at the end of the first hour after ingestion of the glucose while others disregard the peak value and emphasize the two-hour level as the most important.

One of the most critical studies of glucose tolerance tests over a number of years using "true glucose" methods for blood sugar analyses has been that of Conn and Fajans.[7] It is their belief that diabetes mellitus is present when a glucose tolerance curve falls at or above 160 mg. per 100 ml. in one hour, 140 mg. per 100 ml. at one and a half hours, and 120 mg. per 100 ml. at two hours. Fajans and Conn[18] regard the combination of a one-hour value of 160 mg. per 100 ml. or more plus a two-hour value of 120 mg. per 100 ml. or more to be diagnostic of the existence of the diabetic state. A peak which is below 160 mg. per 100 ml. and has fallen to below 110 mg. per 100 ml. at two hours is regarded as indicative of normal tolerance. When the one-hour value is 160 mg. per 100 ml. or more, the one and a half hour value is 135 mg. per 100 ml. or more, and the two-hour value falls between 110 and 120 mg. per 100 ml., a diagnosis of probable diabetes is made. In borderline curves the value at one and a half hours is required to be 140 mg. per 100 ml. or more to be diagnostic. Fajans and Conn[18] state: "This restriction eliminates a false diagnosis of diabetes on the occasional curve that drops abruptly to normal at one and a half hours, then rebounds above 120 mg. per 100 ml. by two hours."

Cortisone-glucose tolerance test. Following a long-term study in an effort to detect the diabetic trait earlier and before loss of carbohydrate tolerance was evident by standard means, Conn and his group evolved the cortisone-glucose tolerance test, and Conn and Fajans reported the results of this study recently.[7]

Following the usual preparatory diet for three days, the patient who weighs less than 160 lb. is given 50 mg. of cortisone acetate orally eight and a half hours and again two hours before the standard glucose tolerance test is done. The test dosage of cortisone acetate is 62.5 mg. at both these intervals in an individual weighing more than 160 lb. The blood sugar level at two hours following the administration of the glucose is the critical level for diagnosis. A level of 140 mg. per 100 ml. (Somogyi-Nelson) or higher is regarded as a positive response, while a curve below this is regarded as a negative response.

Following normal standard glucose tolerance tests in 393 nondiabetic relatives of persons known to have diabetes, the cortisone-glucose tolerance test showed a positive response in 26 per cent, while in those over 48 years of age, a positive response was noted in 48 per cent. Ninety per cent of individuals classified as those with probable diabetes by the standard glucose tolerance test gave a positive response. Eighty-six per cent of obese patients whose standard glucose tolerance test became normal following weight reduction showed a positive response to the cortisone-glucose tolerance test. Diabetes developed in 26 per cent of 57 nondiabetic relatives of diabetic patients followed over a period of seven years who had initial positive responses. The cortisone-glucose tolerance test may prove to be valuable for the earlier detection of the diabetic state.

Time and continued study are needed to determine the true future incidence of diabetes in the positive response group according to Conn and Fajans.

Different steroids have been used by some investigators employing various modifications of the glucose tolerance test, but it is difficult to make accurate comparisons with the cortisone-glucose tolerance test because of the variables used in making the tests.

Glucose tolerance tests in the pregnant. Many investigators feel that pregnancy exerts a diabetogenic effect and that transitory abnormalities of carbohydrate metabolism which may be detected by glucose tolerance tests, may occur, especially in the latter part of pregnancy. In some of these individuals the impairment of carbohydrate tolerance may disappear post partum while others may develop overt diabetes shortly post partum or many years later. In a study up to 5.5 years post partum of 137 women who had shown abnormal glucose tolerance tests during pregnancy, O'Sullivan[19] found that diabetes had developed in 28.5 per cent.

There is no universal opinion as to what constitutes a diabetic curve following an oral glucose tolerance test in a pregnant patient without frank diabetes. Some investigators feel that the second- and third-hour blood sugar levels are physiologically a little higher in the pregnant woman and that different standards for diagnostic purposes should be used. Other investigators believe that the carbohydrate metabolism is impaired when blood sugar levels exceed those of accepted normals. It would be ideal to perform a glucose tolerance test in all pregnant women, but it is especially indicated in those with a family history of diabetes and in those who have had a history of the diabetic traits previously described. Blood sugar levels above the accepted normals may be the first indication of a diabetogenic effect, and many investigators feel that such an individual should be treated in the same manner as one with frank diabetes.

Not all individuals with abnormal glucose tolerance tests during pregnancy will develop diabetes, since the beta cell may survive the onslaught of betacytotropic factors occurring in pregnancy.

The production of a large baby or the finding of islet cell hypertrophy and/or hyperplasia in the stillborn may be an earlier indication of prediabetes than a glucose tolerance test.

Steroid glucose tolerance tests on pregnant women are now being studied and again a variance of opinion exists as to their interpretation. Only long-term studies will evaluate the meaning of these results. Oral glucose tolerance tests during pregnancy have not correlated well with intravenous glucose tolerance tests, and this disparity needs further clarification.

Glucose tolerance tests in the aged. There is no unanimity of opinion as to the effect of age on glucose tolerance. Many investigators believe that carbohydrate tolerance tends to decrease as age advances. Steroid-primed glucose tolerance tests have shown a greater number of positive responses in older people. Glucose tolerance may be diminished in the older group as a result of decreased activity, increased bed rest, chronic illness, decreased food intake, and the like. Conclusive studies on the effects of old age alone on carbohydrate tolerance are not available. The completion of such studies may require a change in the criteria for the interpretation of glucose tolerance tests in the aged.

OTHER DIAGNOSTIC TECHNIQUES

The standard and steroid-primed intravenous glucose tolerance test, the intravenous sodium tolbutamide test, and the rapid intravenous glucose tolerance test have some value as diagnostic tools, but they are not applicable as screening procedures in office practice.

A new oral diagnostic test for diabetes has been described by Boshell and associates.[20] After an overnight fast, 2 gm. of sodium tolbutamide and 4 gm. of sodium bicarbonate are given orally. The test may be employed as a rapid screening method by determining the fasting blood sugar and the blood sugar thirty minutes after the administration of the sodium tolbutamide. The blood glucose levels of 91.5 per cent of normal subjects are below 78 per cent of the pretest value within thirty minutes, and the blood glucose levels of 96.9 per cent of diabetic individuals remain above 78 per cent of the pretest level thirty minutes after the ingestion of sodium tolbutamide and bicarbonate.

Long-term studies and comparison with other methods will be required to evaluate this procedure.

SUMMARY

1. Newly revised figures of the American Diabetes Association indicate an increased incidence of diabetes.

2. The greatest number of diabetes suspects will be found in those individuals with a family history of diabetes and those who are obese.

3. Certain obstetrical and fetal abnormalities are strongly suggestive of prediabetes.

4. The early diagnosis of diabetes cannot be made by fasting blood sugar and urine analyses.

5. Postprandial urinalyses are easily done in the office, especially by using one of the glucose oxidase strips. All individuals showing a positive test should have follow-up blood sugar studies.

6. A blood sugar test two hours after a glucose load is preferable to a postprandial blood sugar determination as a screening method for the diagnosis of diabetes. A blood sugar level at or above 140 mg. per 100 ml. at two hours (venous true glucose) is usually indicative of diabetes. Where the level is between 110 and 140 mg. per 100 ml., the blood sugar test should be repeated again under similar conditions.

7. In doubtful cases a glucose tolerance test should be done, especially in those who have a hereditary history of diabetes, are obese, or exhibit certain diabetic traits.

8. A glucose tolerance test done carefully under certain standard conditions is still the most reliable method for the diagnosis of early diabetes in routine practice.

9. In 77 per cent of women delivering an infant weighing 10 to 11 lb., diabetes developed within an average period of twenty-four years. Of women who showed an abnormal glucose tolerance test during pregnancy, diabetes developed in 28.5 per cent within a period of 5.5 years post partum.

10. The cortisone-glucose tolerance test shows a larger number of positive responses in nondiabetic relatives of those with diabetes, in the older group, and in the obese who, following weight reduction, have a normal glucose tolerance test. Diabetes developed in 26 per cent of 57 nondiabetic relatives, who had an initial positive response to the test, in a period of seven years. The cortisone-glucose tolerance test may prove to be valuable in the earlier detection of the diabetic state.

11. There is a variance of opinion as to the interpretation of the glucose tolerance test in the pregnant woman and in the aged.

12. Intravenous tests of various types are not applicable to office use.

13. A new oral tolbutamide test will require further evaluation as a screening method for diabetes.

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The Mode of Action of Insulin

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It is not the purpose here to review within a brief compass all or even a major part of the data pertaining to the actions of insulin. This has been done at intervals by others. The selected comments are intended for clinically oriented physicians as a summary of the effects of insulin upon carbohydrate, protein, and fat metabolism in certain tissues.

EFFECT OF INSULIN ON CARBOHYDRATES

Transport of glucose. In some tissues insulin accelerates the entry of glucose and certain related sugars into cells or other fluid compartments. This is true in striated muscle (skeletal, diaphragm, and heart), fat cells, and the aqueous humor of the eye but not in the liver, the kidneys, the gut, the red blood cells, or the lymph nodes.[1–16]

In those tissues in which glucose entry into cells increases under the influence of insulin an unidentified transport system within the cell wall is activated.[9] Within the cell this sugar is immediately phosphorylated to glucose-6-PO_4 so that there is no accumulation of free glucose.

In the gut and the kidney, glucose present on the luminal side of the cell can be accumulated within the cell as free glucose in quantities in excess of those in extracellular fluid,[6] thereby permitting its entry or reentry into the body as a consequence of the concentration gradient. Insulin has no effect on this accumulation.

In the liver and the kidneys glucose-6-PO_4 within the cells can be converted to free glucose by means of glucose-6-phosphatase and released into the hepatic or renal vein blood. In the absence of insulin, glucose-6-phosphatase is increased in these tissues but the maintenance of normal levels of this enzyme has not been identified as a direct action of insulin.[10]

Carbohydrate metabolism within cells of muscle and other tissues. Once glucose has entered a cell such as striated muscle with or without the intervention of insulin the phosphorylation to glucose-6-PO_4 occurs under the influence of ATP and hexokinase (glucokinase). It then may be converted to glycogen, enter the direct oxidative pathway or hexose monophosphate shunt in which carbon-1 is removed and TPNH is produced or proceed down the anaerobic glycolytic pathway which yields pyruvic or lactic acid and active acetate or acetyl CoA. The chief end product of anaerobic glycolysis, that is, pyruvic acid and acetyl CoA, can then enter the aerobic phase, the Krebs cycle, and be converted to CO_2, H_2O, and energy. Alternatively, the acetyl CoA and other products of glycolysis may be used for the synthesis of protein and of fat. TPNH produced by the operation of the hexose monophosphate shunt is available for the hydrogenation of the fatty acid precursors synthesized from acetyl CoA. All these processes are dependent upon glucose supplies, and their acceleration in muscle by insulin is explicable by the increased entry of glucose under the influence of this hormone.

Evidence for a direct intracellular effect of insulin independent of glucose transport has been offered only for the synthetase pathway of glycogen formation.[11,12]

In those tissues in which insulin does not increase glucose transport into the cell, as in liver, glucose apparently enters freely in the absence of this hormone. In such tissues the glycogenic effects of insulin and its acceleration of the hexose monophosphate shunt, anaerobic glycolysis, proteinogenesis and lipogenesis represent effects exerted within the cell, mediated perhaps by spatial or other rearrangements of intracellular structures.

In tissues such as the brain, excluding the pituitary, in which insulin appears to have no effect on carbohydrate (or on fat and protein),[13,14] the transport of glucose and the integrity of cellular structures and processes are maintained by unidentified mechanisms.

EFFECT OF INSULIN ON LIPID METABOLISM

The changes which occur in the epididymal fat pad in vitro serve to illustrate effects of insulin upon lipid metabolism. In such a preparation the addition of insulin in the presence of glucose enhances the production of glycogen, fatty acids, and CO_2; increases the conversion of newly

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formed or added fatty acids to triglycerides; and decreases the release of fatty acids from triglycerides.[17]

The synthesis of fat from glucose is effected by condensation of acetyl CoA, a chief end product of glycolysis, into fatty acids. This is accompanied by an uptake of O_2 and a greater evolution of CO_2. TPNH produced during the operation of the hexose monophosphate shunt provides hydrogen for incorporation into the fatty acid molecules.[17]

When supplies of glucose and insulin are optimal and glycolysis is proceeding at an adequate rate, the fatty acids produced from acetyl CoA are largely joined to glycerol formed during glycolysis and deposited as triglycerides. When fatty acid synthesis decreases, as a consequence of glucose or insulin lack, the rate of release of fatty acids from triglycerides rises.

The addition of insulin to epididymal fat tissue without or with glucose alters the cell structure and pinocytosis, thinning of the cytoplasmic matrix, lipid droplet formation, and increases in the size of mitochondria occur.[18] These changes suggest that insulin is capable of altering cell ultrastructures and are consonant with the possibility that these alterations play a role in producing the observed insulin effects.

PROTEINOGENESIS UNDER THE INFLUENCE OF INSULIN

Insulin enhances protein formation in muscle, liver, and adipose tissue, perhaps by making derivatives of glucose such as pyruvic acid, acetyl CoA, and energy available for amino acid and protein synthesis or perhaps by rearranging cellular structures in a manner which facilitates such processes. This could be looked upon as an indirect effect in muscle and adipose tissue in that the primary action of insulin under such circumstances is the transport of glucose into cells whose membranes are not freely permeable to this sugar. However, insulin also increases proteinogenesis in liver in which maximal glucose transport does not require the presence of insulin.[4,19] Moreover, insulin can increase the incorporation of amino acids into protein in the absence of glucose.[20]

Except in the case of glycine this does not appear to be mediated through greater activation of an amino acid "pump." [21]

CARBOHYDRATE, PROTEIN, AND FAT METABOLISM OF LIVER WITH AND WITHOUT ADEQUATE INSULIN SUPPLIES

The effects of insulin upon the liver cannot be attributed, as has already been noted, to an increased transport of glucose into the cell under the influence of this hormone. The parenchymal cells of this organ appear to be permeable to glucose under all circumstances, including diabetes mellitus.

The liver is the most versatile of tissues in terms of carbohydrate production, release, catabolism, and storage. Elegant catheterization and blood flow studies in portacaval shunt animals and humans, such as those of Madison and his group,[22] Miller and associates,[23] and others, have pinpointed the participation of insulin in some of these processes. Thus the net hepatic glucose output increases during a shortage of effective insulin, is reduced or canceled by small amounts of insulin alone or by larger amounts of insulin together with a glucose load, and again rises during increases in insulin levels accompanied by a shortage of glucose.

In other words, the hepatic glucose output at any moment may be derived from glycogenolysis,, gluconeogenesis, or both, depending on the availability of effective insulin and of glucose. Similarly the hepatic glucose uptake at any moment is dependent on glycogenation, catabolism of glucose, and conversion of glucose to fatty acids and to protein, again in response to insulin and glucose or other substrate loads.

In the absence of effective quantities of insulin, as in clinical diabetes mellitus, glucose-6-phosphatase is increased; glucose from glycogen or other precursors is released to the circulation; glycogen stores are reduced; the degradation of glucose to CO_2 is decreased; the operation of hexose monophosphate shunt is slowed; the production of fatty acids is diminished; and protein synthesis is reduced. At the same time, ketone body production from hepatic and other lipid stores increases. All of these changes are canceled in time by the administration of insulin. Since they cannot be explained at present by any demonstrated effect of insulin in facilitating glucose transport into the hepatic cell, the corrective effect of insulin in the diabetic patient must be explained through other mechanisms. It may be that, normally, insulin maintains cellular subphases in proper spatial or other relationships and restores such patterns in the diabetic individual.

SUMMARY

It is clearly established that in certain tissues, such as striated muscle and fat, insulin serves as the key to open the door which permits more rapid entry of glucose into cells. Once glucose has been transported into such a cell it may undergo a number of metabolic changes whose net effects include storage as glycogen, loss of carbon-1 in the hexose monophosphate shunt with production of TPNH, or degradation via anaerobic glycolysis to pyruvic acid and acetyl CoA. The latter products can then be converted to CO_2, H_2O, and energy by entry into the Krebs cycle. The availability of TPNH permits fatty acid synthesis and storage of lipid as triglyceride to occur. The availability of the end products of glycolysis facilitates the formation of protein. Hence insulin can be stated to have lipogenic and proteinogenic properties; that is, it is anabolic. Though each of these processes is accelerated by insulin, all but one of these are indirect effects of insulin, that is, they occur secondary to the entry of glucose into the cell. The one possible exception, glycogen formation, may be directly facilitated by insulin.

Unfortunately this simplified scheme does not account for the action of insulin in facilitating the above processes in cells such as those of the liver and kidney in which this hormone does not increase the entry of glucose into cells. In the case of the liver it has been suggested that insulin still functions as an agent which permits glucose entry into cells, even though studies to date have not provided support for this thesis. Until such proof is forthcoming, the possibility that insulin directly influences certain facets of carbohydrate, fat, and protein metabolism clearly exists. It is probable that this hormone alters the inner structure of the cell, just as it can modify membrane function with respect to transport in some tissues, and that these rearrangements then make possible its recognized effects.

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Insulin in the Treatment of Diabetes

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MORE THAN FORTY YEARS have elapsed since insulin became available and yet, all too often, it is not used when needed or, if taken, it is not used in a way which will yield optimal results. Although some patients present difficult problems, the vast majority respond in a straightforward manner to insulin treatment which is carefully planned and executed. It is the purpose of this article to discuss briefly the indications for the use of insulin and the methods of employment which have been found workable through experience.

PREVALENCE AND TYPES OF DIABETES

It is estimated that approximately 2 per cent of the population has diabetes.[1] In the United States today, this would amount to between 3,000,000 and 4,000,000 persons. Taking 3,000,000 as a conservative figure, it is estimated that only about 60 per cent, or approximately 1,750,000 individuals, are aware that they have the condition. The remaining 1,250,000 persons with unrecognized diabetes include those who, through neglect, fear, or lack of compelling symptoms, have not sought medical attention or for whom medical care has been inadequate.

It is further estimated that the frequency of the gene for diabetes in the general population is about 22 per cent. Five per cent of the population is thought to be genetically liable to the actual development of the disease and, granted sufficient length of life, will eventually become diabetic.[2]

Although all diabetes is unified through the common bond of heredity, it expresses itself as two main types: (a) as an unstable insulin-dependent, ketosis-prone variety seen characteristically in the person with onset of clinical diabetes in childhood or, less strictly, before the age of 25 or 30 years and (b) as a stable variety less prone to ketosis and less dependent upon injected insulin which has its onset in persons over 40 years of age. However, there are many mixtures and crossovers between the two general types; a physician often encounters unstable, ketosis-prone diabetes in patients with onset in adult life and, conversely, he may less commonly see stable, asymptomatic diabetes in children.

Two conclusions may be drawn from the above: (a) Diabetes is widespread and persons with this disorder must form a considerable part of the practice of every physician. (b) The type and severity of diabetes is diverse so that treatment must be suited to the individual.

INDICATIONS FOR INSULIN TREATMENT

Insulin is indicated in (a) almost all patients with growth-onset type of diabetes, that is, those with onset in childhood and adolescence; (b) most patients with onset of diabetes under the age of 25 to 30 years and older persons with the unstable, juvenile form of the disease; (c) many older persons with maturity-onset type of diabetes; and (d) those of any age in the presence of diabetic ketoacidosis and coma. The indications in youthful patients are usually plain. In older patients with maturity-onset diabetes the best rule is the following: If, on a diet which is found necessary to maintain the strength and (ideal) weight of a given person, glycosuria and significant hyperglycemia persist, then insulin should be prescribed without hesitation. The only exceptions are in those middle-aged and elderly patients in whom one or another of the oral hypoglycemic compounds may be truly effective. Selection for oral agents must be carefully made and rigid criteria of control observed.[3,4]

TYPES OF INSULIN

The varieties of insulin currently available on the market in the United States are listed in table 2 of Dr. White's paper which appears in this symposium. Arranged as to promptness of action and duration of effect, the order is as follows: crystalline, semilente, globin, NPH (isophane), lente, ultralente, and protamine zinc. It will be noted that the lente "family" of insulins includes 3 members whose action is relatively rapid, slow, and very slow, respectively. Combinations of these "insulin-zinc suspensions" are used less widely in the United States than in certain other countries.

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Except for the crystalline type, all insulins are modified so as to delay absorption from a subcutaneous or intramuscular depot and thereby to achieve a slower and longer action. Modifications are made by the addition of zinc or a protein (protamine or globin), or both, in the presence of a suitable buffer.

Each type of insulin is available in U_{40} and U_{80} strengths (respectively, 40 and 80 u. per cubic centimeter). Crystalline insulin may be obtained also in U_{100} and, on prescription, U_{500} strengths for use in patients with high insulin requirements.

NPH and lente insulin possess much the same rate of action and duration of effect. For all practical purposes they may be used interchangeably.[5] Theoretically, lente insulin is preferable since it contains no protamine or other added protein and might be expected to provoke fewer allergic responses.[6] However, this is not a matter of great practical importance since the vast majority of patients tolerate NPH insulin very well.

INITIATION OF TREATMENT WITH INSULIN

Treatment with insulin should be started in a hospital with all patients who are acutely ill, children and adolescents, older patients with severe symptoms, and persons who live at such a distance from the physician's office or outpatient department as to preclude frequent visits. Indeed, initiation of treatment under hospital conditions is advantageous for all patients provided facilities include arrangements for being up and about and physically active, provision of weighed or measured diets, an intensive program of instruction both in classes and individually, and the carrying out of tests for sugar in urine and blood at frequent intervals. Concentrated treatment for a week under such conditions, together with the association with other patients with similar problems, provides the patient with knowledge and enthusiasm which are difficult to acquire by other means. However, it is possible to achieve excellent results on an outpatient basis and, in fact, the country over, most older patients are, of necessity, treated in this way. Consequently, the procedure to be described below is with the middle-aged or elderly outpatient in mind. Treatment in the hospital follows the same general principles but progresses faster.

The essentials of the initial interview are as follows:

1. General and diabetic history; complete physical examination
2. Unequivocal diagnosis of diabetes by blood sugar determinations
3. Beginning of education of the patient and his family by personal instruction and manuals or pamphlets regarding diabetes
4. Written diet directing the patient what to eat (not simply what to avoid). Instruction regarding approximate equivalents
5. Instruction in methods of testing urine for sugar.

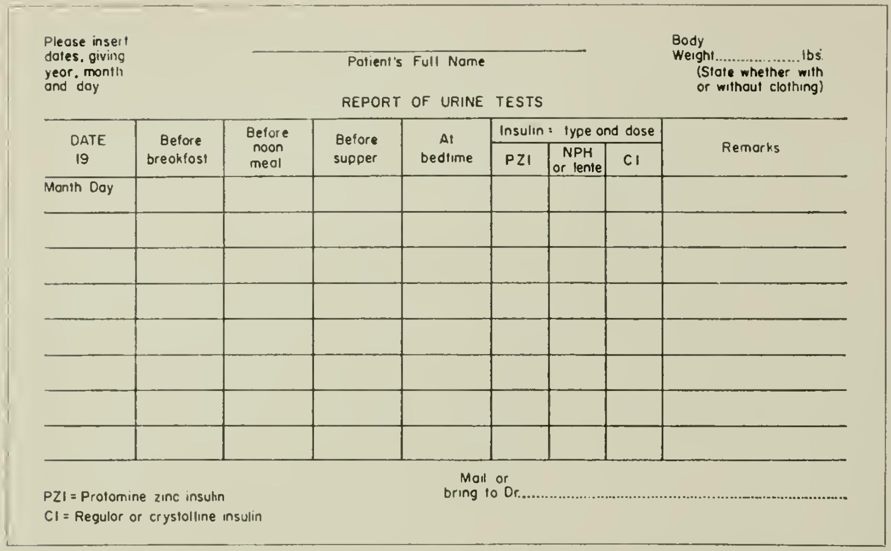
Many older patients, especially if overweight, will improve steadily on dietary restriction alone and, over a period of days or a few weeks, achieve good control of diabetes as manifested by total absence of sugar in the urine and blood sugar values which approach normal.

If dietary restriction alone fails to bring about satisfactory control, insulin should be started unless the patient appears to be a good candidate for trial of oral hypoglycemic agents. Even in such instances it is well to acquaint the patient and his family with the basic facts regarding insulin treatment. Above all, oral therapy should not be continued for more than brief periods if found unsatisfactory because of the real difficulty later in persuading patients long on oral treatment to accept the daily injection of insulin which they need. Daily experience testifies to the fact that many patients, despite poor control of diabetes, are kept on oral therapy for prolonged periods when they deserve the benefit of insulin.

In the average adult outpatient who is not acutely ill, the initial dose of NPH (or lente) insulin may be 12 u. daily before breakfast. The patient is instructed to test the urine for sugar and to keep a record of the findings of tests made just before each of the three main meals. The results are kept in tabular form on a suitably ruled sheet or in a notebook (figure 1). The patient is told that the best index of the effect of the NPH (or lente) insulin is to be found in the urine test just before the evening meal. He is instructed to increase the dose of insulin, 2 u. at a time, until the tests before supper become satisfactory. One or two days are allowed between successive increases so as not to overshoot the mark. Urine specimens tested are not the first following the taking of food but the second (or later) passed after a meal or a snack.

At first the patient is seen every few days or at least once a week so that advice may be given to supplement the general directions just outlined. At such visits blood sugar determinations are made.

When an insulin dose is found with which the urine tests (and blood sugar tests, if available) in the late afternoon are satisfactory, then one



Please insert dates, giving year, month and day

Patient's Full Name

Body Weight..................lbs.
(State whether with or without clothing)

REPORT OF URINE TESTS

DATE 19	Before breakfast	Before noon meal	Before supper	At bedtime	Insulin: type and dose			Remarks
					PZI	NPH or lente	CI	
Month Day								

PZI = Protamine zinc insulin
CI = Regular or crystalline insulin

Mail or bring to Dr...

Fig. 1. Form used for recording results of urine tests for sugar

turns attention to the outcome of tests just before the noon meal. If these are not satisfactory, the physician adds a dose of crystalline insulin to the treatment schedule. This is at the start only 4 or 6 u., drawn into the syringe first before drawing in the dose of the NPH (or lente) variety. (Air should be injected into the vial of modified insulin before going to the crystalline insulin bottle). Thus both types are given in a single injection daily before breakfast.

From this point on, adjustment of insulin dosage is relatively simple. The tests before supper continue to serve as a guide to the dose of NPH (or lente) insulin, and the tests before the noon meal act as a guide to the dose of crystalline insulin. Increases or decreases may be made, 2 u. at a time, in the appropriate types of insulin. The intention is not to make changes daily, or even frequently, but rather over longer intervals according to the general trend of the outcome of the urine tests (or blood sugar determinations) at the times of day indicated. These trends are most easily and conveniently seen, as mentioned earlier, when the results of tests are kept in tabular form, preferably in a notebook ruled for that purpose. The patient may not be able or may not need to test the urine before each meal every day but the results of the tests that he is able to carry out are entered in the appropriate blanks on the chart, thereby serving for long-range guidance.

With most patients with maturity-onset type of diabetes, the giving of insulin once daily before breakfast suffices. However, in certain of these and in approximately one-half of youthful patients with well-established diabetes, fasting (before breakfast) hyperglycemia of unwanted degree will persist despite good results during the course of the day. In this situation the physician cannot increase the amount of insulin given before breakfast lest hypoglycemic attacks be provoked. Instead, he prescribes a smaller amount of insulin to be given in the latter part of the day. This may be given before supper but in most patients a small dose of NPH (or lente) insulin at bedtime proves to be the most convenient and satisfactory way to provide control of diabetes during the night. A starting dose might well be only 4 u. with increases in increments of 1 u. at a time until the fasting blood sugar is brought to a satisfactory level. This program of a "split dose" of insulin has received wide use and acceptance in the last decade.

One need not be concerned with the presence of small amounts of sugar in the urine test at bedtime as long as tests before the three meals are satisfactory. However, in those patients in whom the amount of sugar in the bedtime test is consistently large, the evening dose of insulin may be given before supper rather than at bedtime. This permits the use of a small amount of crystalline insulin to aid in the utilization of food of the evening meal and, in the same syringe, an appropriate amount of NPH (or lente) insulin for sustained effect during the night.

It is important that the diet be so planned that snacks providing 10 to 20 gm. of carbohydrate are taken regularly in the midafternoon and at bedtime. Similar snacks may be desirable in the midmorning in those patients with whom there is an unusually long interval between breakfast and noon and who are physically active during the forenoon. The food value of these snacks is included in the total dietary prescription.

TABLE 1

GUIDE TO ADJUSTMENT OF INSULIN DOSE ACCORDING TO OUTCOME OF BLOOD AND URINE GLUCOSE TESTS

Insulin		*Urine or blood glucose tests (or, conversely, hypoglycemic reactions) serving as best indexes of insulin dose*			
Type	*Time of administration*	*Before breakfast*	*Before noon meal*	*Before supper*	*At bedtime*
Crystalline	Before breakfast		X		
NPH (or lente)	Before breakfast			X	
Crystalline	Before supper				X
NPH (or lente)	Before supper	X			
NPH (or lente)	At bedtime	X			

In table 1 are shown the urine tests which are of most significance in indicating needed alterations in the insulin doses.

PLACE IN TREATMENT OF OTHER INSULIN PROGRAMS

All varieties of insulin are effective and, with care, any type could be used with at least fair success if it were the only one available. However, due regard must be had for the rate of action and duration of effect of the insulin used and necessary adjustments made in the type, amount, and distribution of food.

Globin insulin may be effective in a single dose before breakfast in older persons with stable diabetes who, presumably because of considerable endogenous insulin production, have no significant tendency to fasting hyperglycemia. It may be used successfully in certain other patients if given twice daily, before breakfast and before supper.

Protamine zinc insulin may be used before breakfast either alone or with accompanying separate injections of crystalline insulin provided overdosage is avoided. Since its action is a prolonged one, the best single guide to dosage is the urine or blood sugar test the following morning before breakfast. Regardless of the degree of glycosuria or hyperglycemia during the daytime, the dosage of protamine zinc insulin must not be pushed beyond the point at which the blood sugar level the following morning is satisfactory. Any additional insulin effect during the daytime must be secured by the use of crystalline insulin in appropriate dosage. Often necessary is a dose of crystalline insulin before breakfast, given by separate injection at the same time as the protamine zinc type. In usual dosage the two types must not be given in the same syringe because the crystalline insulin would be converted to more protamine zinc insulin due to the excess of protamine contained in this type of modified insulin. In certain patients another dose of crystalline insulin must be given before the evening meal to prevent gross glycosuria during the evening.

Before the introduction of NPH insulin in 1950, quite wide use was made of insulin mixtures, that is, mixtures of crystalline and protamine zinc insulin in the syringe or vial, usually in the proportion of 2:1 although this was varied according to the needs of the individual patient.[7] By mixing, in terms of units, an amount of crystalline insulin larger than that of the protamine zinc variety, one obtained not only more long-lasting effect but also some prompt action since the amount of crystalline insulin exceeded that which was bound and converted by the excess protamine in protamine zinc insulin. With the advent of NPH and, later, lente insulin, the need for 2:1 and similar mixtures disappeared.

Market lente insulin is a 70:30 mixture of ultralente and semilente insulins. Any other combination is possible, made either daily in the syringe or in advance in a vial, thus producing an effect "tailor-made" for the individual. Or, if one wishes, semilente insulin may be mixed with lente insulin or the latter may be combined with ultralente insulin in varying proportions. Such combinations have not been used widely in the United States probably because of the earlier introduction of NPH insulin to the market and because of the ease with which desired effects may be produced by varying the amounts of crystalline and NPH (or lente) insulins given by single injection.

Over the past several years the writer and his associates have made many trials of mixtures in the syringe of crystalline and ultralente insulins in the attempt to secure both a prompt and a prolonged effect from a single injection, thereby avoiding a second injection later in the day. These clinical trials have been successful only in part and the results have often lacked the desired predictability.

INSULIN REACTIONS

Hypoglycemic attacks due to insulin are annoying and may be alarming to the patient and his family. They reduce his efficiency at work and, if severe, may present elements of danger. Consequently, they must be avoided but not at the expense of allowing the diabetic condition to be under consistently poor control. Almost always there is a sensible and comfortable middle ground which may be attained by careful choice of the type, amount, and time of administration of food on the one hand and of insulin on the other. It is essential that the diet be reasonably constant from day to day in order to reduce the number of variables. Between-meal snacks must be taken. Changes in the insulin dose must be made in small increments rather than in large amounts at a time. Prior to, or during, physical activity which is unusual for the patient, extra food in modest amounts should be taken.

A difficult problem is posed by the patient who, after having taken insulin for some years, begins having hypoglycemic reactions without the usual warning signs.[8,9] Success in management depends upon observance of the principles of prevention outlined above and upon as early recognition and treatment as possible by either the patient or a companion.

The vast majority of insulin reactions are of relatively little consequence and should be taken "in stride" by the patient. Prompt administration of a small amount of sugar, orange juice, ginger ale, or the like results in rapid recovery. In patients not able to cooperate, the giving of 1 mg. of glucagon subcutaneously or intramuscularly often will result in sufficient improvement to permit the giving of carbohydrate orally. In a certain few instances the giving of 20 to 50 cc. of a 50 per cent solution of glucose intravenously may be necessary.

It is important to realize that the unconscious diabetic patient may have a low rather than a high blood sugar and may be in hypoglycemic rather than diabetic coma. It is rare for truly serious results to follow the administration of a single dose of insulin, however large, but the giving of additional insulin to a person already in hypoglycemic coma may produce irreversible changes in the central nervous system or even death. Points in the differential diagnosis should be familiar to all physicians. *If in doubt and if laboratory aid is not promptly available, the giving of a small amount of glucose intravenously as described above will do no harm and may bring about restoration of consciousness.* However, if recovery does not take place promptly, the patient should be removed at once to a hospital where facilities are available for prompt diagnosis and treatment.

INSULIN ON DAYS OF ACUTE ILLNESS

The treatment of diabetic ketoacidosis and coma is outside the scope of this paper. However, comment is necessary regarding the use of insulin on days of acute illness, especially that accompanied by fever. Usually at such times the insulin requirement becomes greater even though the food intake may be less, due to anorexia, nausea, or vomiting. At any rate, the inviolable rule for the patient must be: Never omit insulin unless with gradual reduction in dosage and tests made every four hours consistently show the urine to be free from sugar or nearly so. Stated positively, the instructions may read somewhat as follows:

a. Continue the usual insulin pattern including NPH, lente, or other modified type of insulin as well as crystalline insulin if that is being used.

b. Use the same amount of insulin as usual on arising or, if overdosage seems a real possibility, reduce by no more than 25 per cent.

c. Test the urine at noon and at 5 or 6 P.M. Give additional crystalline insulin according to a schedule such as this:

If urine test is	Red Orange Brown	Yellow Yellow-green	Green Blue
Give crystalline insulin units	10	6	0

The colors refer to those obtained by Benedict's method. The numerical scale must be adjusted to the patient and might range from 6-4-0 to 12-8-0 or greater. If significant glycosuria persists, additional insulin may be given at bedtime.

If, during a period of illness, tests show a consistent need for additional insulin during the day, the before-breakfast doses should be increased gradually to take care of this requirement.

USE OF INSULIN DURING THE PERIOD OF SURGERY

Since diabetic patients often require surgery, a word regarding insulin treatment during this period of stress[10] is in order. Needless to say, if surgery can be delayed without harm to the patient, such should be done to allow time for bringing the diabetic condition under good control. On the day of surgery, in lieu of food, an infusion of 1,000 cc. of 5 per cent glucose in water (or, in part, salt solution) is started prior to or at the time the patient is taken to the operating room. At the same time there is given subcutaneously an injection of insulin in dosage of about one-half the amount required daily. For example, if the daily dose had been 20 u. of crystalline and 40 u. of NPH insulin before breakfast, 10 u. of crystalline and 20 u. of the NPH type would be given at this time. Following surgery and on return to the recovery room or ward, the other half of the usual dose is given. At the same time, another intravenous infusion of glucose in water or salt solution is started. In the middle or latter part of the afternoon a determination of the blood glucose is made as an automatic check as to the status of the diabetic condition. The following morning the usual dose of insulin before breakfast is resumed, provided the patient is taking food and not vomiting.

The advantages of the procedure described above are: (a) Insulin needs are met more adequately during the day of surgery than if depot insulin is omitted and crystalline insulin given at intervals according to qualitative tests for sugar in urine; (b) smoothness and continuity of treatment are maintained; (c) urine specimens need not be obtained and tested at frequent intervals (often at much inconvenience or by catheterization); and (d) overdosage of insulin, given on the basis of "overflow" glycosuria resulting from intravenous injections of glucose, is avoided.

The possibility of hypoglycemia is small but, in the case of patients whose diabetes has been under meticulous control just prior to surgery, the total dosage on the day of surgery may be reduced by 10 to 15 per cent.

UNTOWARD EFFECTS OF INSULIN

In a large percentage of patients started on insulin treatment there may appear at the site of injection an allergic tissue response varying from an inconsequential amount of redness, swelling, and itching to a condition of marked swelling and pain. With lesser degrees of untoward response no treatment is necessary and the patient may be reassured that the condition will gradually diminish as daily injections of insulin are continued. For more troublesome responses, symptomatic treatment such as cold compresses may be used. Often the giving of an antihistamine preparation orally for several days or a few weeks will help tide the patient over the troublesome period. Occasionally it may be necessary to inject an appropriate amount of an antihistamine preparation in solution along with insulin. Fortunately, generalized urticaria or angioneurotic edema are rare; if they occur, desensitization to insulin must be carried out.

Patients must be taught to vary the site of injection from day to day so that no area 3 or 4 cm. in diameter receives insulin oftener than once in three or four weeks. If insulin is injected daily into the same place, the skin and subcutaneous tissues may become thickened and scarred; absorption of insulin from such an area may proceed at an unpredictable rate. Another untoward effect of insulin administration is lipodystrophy. This may take two forms: hypertrophy and atrophy.[11] Hypertrophy of subcutaneous fat at the site of insulin injections may at times be unsightly but is usually not complained of nearly as much as insulin atrophies. The latter occur to a varying degree in about 50 per cent of children who receive insulin and in approximately 20 per cent of adult females and 5 per cent of males. Insulin atrophies are of cosmetic importance only; no significant pathologic change takes place other than the disappearance of subcutaneous fat. This appears to be a local metabolic effect of insulin. No way has been found to prevent the occurrence of atrophies in susceptible individuals. The practical solution is to avoid the arms and legs for injections and to restrict them to areas of the body not exposed to public view, namely, the abdominal wall, flanks, and upper buttocks. If areas of fat atrophy are left alone and further injections studiously avoided, restoration of adipose tissue may take place slowly over a year or two.

INSULIN RESISTANCE

Occasionally patients are encountered who require large amounts of insulin daily for control of hyperglycemia. Arbitrarily, a patient is said to have "insulin resistance" when, apart from temporary conditions, such as ketoacidosis and acute infections, the requirement is 200 u. or more daily. The causes of marked insensitivity to insulin are:

a. Development of antibodies to insulin. Most, if not all, persons develop antibodies to some degree after injections of insulin for several weeks.[12] In those becoming "resistant," this tendency is great. The insulin-neutralizing activity is associated with the gamma globulin fractions of blood serum.

b. Binding of insulin by protein apart from an antigen-antibody relationship.[13]

c. Peripheral tissue unresponsiveness despite an excess of insulin in plasma.[14]

d. Ill-defined insulin antagonists, perhaps partially of pituitary and adrenal origin.

Treatment of insulin resistance is not well defined and various measures[15] must often be given a trial before success is achieved. Types of therapy successful in certain cases include:

a. Passage of time. Experience has shown that aggressive treatment with satisfying of the insulin requirement will result in reduction of requirement over the course of months in about 30 per cent of cases.

b. Use of dealaninated pork insulin. The thought here is that removal of the terminal aminoacid, alanine, on the B chain of the insulin molecule, results in an insulin structurally quite similar to human insulin. Unexpectedly, it has been found that unmodified pork insulin may also result in a lower insulin requirement,[16] presumably because, at least in certain individuals, the tendency to antibody formation is less with insulin of pork origin than with that from beef.

c. Use of adrenal steroids. This seems to be associated with changes in insulin antibodies although whether this is related to lessened antibody production, to decrease in the binding of insulin by antibody, or to increase tissue responsiveness, is not well understood.

d. Oral hypoglycemic agents. Most reports have been concerned with tolbutamide,[17] but success in one patient was attributed to phenformin.

SUMMARY

1. Practical methods for the initiation and later conduct of treatment with insulin are described. Suggestions are made as to selection of type, dose, and time of administration of insulin, stressing that treatment must be on an individual basis.

2. Guidelines are presented for the use of insulin on days of acute illness and during the period of surgery. Insulin resistance is discussed.

3. Complications and untoward effects, including hypoglycemic reactions, allergic responses, and lipodystrophy, are described briefly.

4. Diabetes is characterized by a deficiency of effective circulating insulin. Good treatment demands that this lack be as nearly overcome as possible. By treatment with insulin, not only may the acute complication of ketoacidosis be avoided but, also, long-term vascular disease may be at least postponed or minimized.

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IN DOGS, intravenous infusion of 20 to 60 μg. of serotonin per kilogram of body weight evokes no secretory response from Heidenhain's pouches constructed from the fundic portion of the stomach. Infusion of 20 μg. of serotonin per kilogram of body weight with 0.5 mg. of histamine base, however, enhances histamine-stimulated free acid secretion. Larger doses of serotonin with histamine do not produce constant results. The augmenting effect probably is accounted for by a serotonin-induced elevation of gastric blood flow. Administration of serotonin does not inhibit histamine-stimulated secretion and has no evident effect on pepsin. These data are based on volume, pH, and free acid and pepsin content of Heidenhain's pouch secretions in 4 dogs.

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The Acute Treatment of Diabetic Acidosis

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DIABETIC ketoacidosis and coma are classical examples of dramatic medical emergencies, but early and correct decisions can influence the final outcome to a much greater extent than in almost any other life-threatening situation which physicians encounter.

Definition. "Ketoacidosis" and "coma" are relative terms. Ketoacidosis is the street which leads to the ultimate nefarious destination known as coma. At nearly any point along the road, proper treatment can change the direction of the patient. While some feel that the term "Diabetic Coma" should be reserved for the unconscious patient,[1] others prefer a definite chemical line of demarcation. At the Joslin Clinic[2] the custom is to define as "coma" any patient with a blood plasma carbon dioxide content of 9 mEq. per liter or less (previously, CO_2 combining power of 20 volumes per cent or less). There are historical and practical justifications for such a definite standard of diagnosis.

Incidence. The mortality figures have changed remarkably in that during the 1898-1914 period, 63.8 per cent of all patient deaths in one series[3] were associated with diabetic coma. Obviously the development of insulin in 1922 changed the picture, and from 1944 to 1957 only 1.5 per cent of Joslin Clinic patients dying anywhere in the world[4] succumbed in diabetic coma. In spite of the fact that the introduction of insulin has materially lowered diabetic coma mortality, there probably will always be a mortality rate of about 3 per cent even under the most ideal conditions. This is because at one end of the chronological scale juvenile diabetics are sometimes discovered with the acute onset of diabetic acidosis, while others, such as older, long-term diabetics, frequently have degenerative complications of the blood vessels which often complicate recovery. The aged with concurrent myocardial infarction or infections such as pneumonia likewise may have a dim prognosis. It is generally agreed that diabetic acidosis or coma can be found in any age group. Sauerbrei[5] recently reported diabetic coma in a 4-month-old baby while Barnett and associates[6] presented a series of patients in whom coma occurred after age 60.

Etiology. There are many reasons for the onset of this condition unique to diabetes. Perhaps the most pertinent reason is the same as it was in 1900, that is, an actual or relative lack of insulin which can be aggravated by an infection and consequent (or concurrent) insulin resistance. This, in turn, is compounded by a whole chain of factors, including dehydration and electrolyte loss, all of which add their negative influence to the eventual outcome in the untreated or inadequately treated patient.

There has been considerable discussion concerning the influence of diet on the etiology of diabetic coma. Mirsky and associates[7] have quite forcefully claimed that excessive carbohydrate ingestion could not be a precipitating cause of diabetic coma and furthermore have suggested that in a child, for example, frequent feedings of carbohydrate should be provided in the presence of infection.[8] Others[9] have stated just as adamantly that overeating is a major cause of coma.

If a person has good diabetic regulation, adequate insulin, and no infection or insulin resistance, it would be difficult indeed for him to induce diabetic coma in himself solely by unwise eating, but the patient who is fastidious with his diet is less likely to be careless with his insulin and will most often pay heed to infections. Too often patients who pay no attention to diet are those whose hyperglycemia and glycosuria go unnoticed, and this background provides the ideal milieu for trouble. If an infection with its attendant insulin resistance is superimposed on this base, the chances for ketoacidosis then are indeed greater and while the fastidious patient may have other problems, he is less prone to acidosis. Thus, the previously cited references,[7,9] taken out of context, are probably both correct, but the fact remains that the primary etiological reason for ketoacidosis is the lack of insulin. It is equally true that in most cases of diabetic coma a precipitating cause can be recognized, whether it be massive infection, omission of insulin, a long-term cavalier attitude toward diabetes, or a combination of all of these. The fact

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is that, considering the potential, no one can really ignore even "mild" diabetes. If studies with prediabetes have already demonstrated kidney microvascular changes, it is not possible to dismiss "chemical" diabetes as a mild and harmless thing.

Over the past decades, after the discovery of insulin lent impetus to the dynamic treatment of diabetic coma, there was sometimes emotional debate concerning various refinements of therapy. This multilateral dialecticism was useful because the ensuing exploration of every facet of the ketoacidosis problem insured wide understanding; as a result, the overall mortality has dropped and in recent years the shifting forces of controversy have migrated to other areas.

The treatment of diabetic ketoacidosis can be divided into three general areas: (a) immediate diagnosis, (b) vigorous specific therapy, and (c) determination of the reason for onset.

IMMEDIATE DIAGNOSIS

This concept not only calls for accurate diagnosis but also infers the desirability of speed as well, since there are few conditions whereby the rapid inception of treatment pays larger dividends.

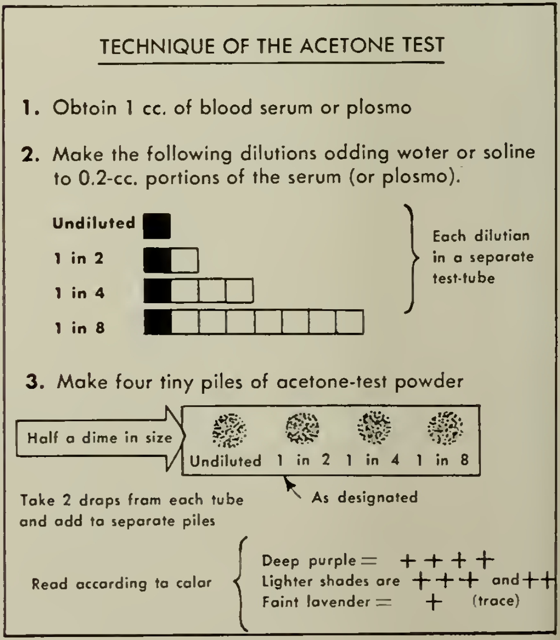
Physical findings. The diagnosis is difficult to miss in the typical case when the classic findings of polydipsia, polyuria, and malaise rapidly change to the more perilous sequelae of nausea, vomiting, dehydration, Kussmaul breathing, and increasing somnolence. The danger lies either in the atypical onset with more subtle signs or in the opposite situation, hospital admission of a patient already comatose for some hours or with varied severe complications. Diabetic acidosis can mimic medical conditions, such as acute myocardial infarction, or simulate an abdominal condition needing surgery—nausea, vomiting, low-grade fever, abdominal pain and rigidity, leukocytosis, and overwhelming toxicity.

Laboratory tests. These may vary from a simple urine sugar determination to the more esoteric arterial blood pH measurements. Needless to say, glycosuria and hyperglycemia combined with ketonuria and ketonemia are always present in varying degrees.

Urine to be tested for glycosuria can be obtained spontaneously or by catheterization. Present-day somewhat crude but rapid tests such as Clinitest and Clinistix (Ames), Tes-Tape (Lilly), or Glucose Test Paper (Pfizer) are immediate qualitative evidence of glycosuria even though the Benedict test is still the accepted standard and the most accurate in testing for glycosuria. Urine can also be checked for acetonuria, using the simplified Acetest tablets (Ames) or Acetone Test Powder (Denco).

Blood should be drawn for sugar, CO_2, and acetone determinations immediately upon the patient's arrival. The same needle intravenously may be attached to the sodium chloride solution or other intravenous fluids to be administered. It is certain that the blood sugar will be elevated and the CO_2 combining power will be depressed. However, while blood sugar elevations greater than 2,000 mg. per 100 cc. have been reported, it is sometimes possible for this measurement to be as low as 200 mg. per 100 cc. or less. While most patients with diabetic acidosis or coma are found to have high blood sugar and low CO_2 levels, this may not be an index to the severity of the emergency. Patients have been comatose with blood CO_2 levels of 15 mEq. per liter while others have been at least partially conscious in the presence of CO_2 levels of 8 mEq. or less.

Serum or plasma acetone is the most reliable, the simplest, and one of the most easily obtained of all the emergency laboratory aids. This test[10,11] not only is a critical index of the acidosis state and a guide to subsequent insulin resistance but has the additional virtue of not requiring elaborate facilities or dependence on laboratory technicians and their working hours. The test may be done with either blood serum (5 cc. of blood centrifuged in an ordinary test tube) or plasma (5 cc. of blood centrifuged in



TECHNIQUE OF THE ACETONE TEST

1. Obtain 1 cc. of blood serum or plasma
2. Make the following dilutions adding water or saline to 0.2-cc. portions of the serum (or plasma).

3. Make four tiny piles of acetone-test powder

Take 2 drops from each tube and add to separate piles

Read according to color
Deep purple = ++++
Lighter shades are +++ and ++
Faint lavender = + (trace)

Fig. 1

an oxalate tube). This sample is then divided among 4 test tubes by adding portions of normal saline (or distilled or tap water) sufficient to make 1 in 2, 1 in 4, and 1 in 8 dilutions as well as the undiluted sample (see figure 1). While either Acetest tablets or Acetone Test Powder can be used, the powder is more convenient. A sample of each dilution is added to a separate test powder pile and is read in one minute. An immediate deep purple is considered 4 plus with varied gradations down to faint lavender (1 plus or trace). Only the 4 plus reading is of any consequence since it is practically unique to diabetic acidosis. An across-the-board reading of 4 plus in each of the four dilutions is found only in the severest diabetic acidosis. On rare occasions when the emergency CO_2 blood level as reported (sometimes by inexperienced "on-emergency-call" technicians) disagreed with the rapid plasma acetone test results, the latter subsequently proved to be correct. This test is invaluable in early rapid differential diagnosis of several conditions which cause unconsciousness (table 1).

Leukocytosis is commonly found in diabetic acidosis; frequently as high a value as 50,000 white blood corpuscles per cubic millimeter can be found even without infection. This leukemoid-appearing response has been shown by Tullis[12] to be due to plasma hypertonicity. The chief danger of leukocytosis, in addition to the accompanying dehydration, is in possibly diagnosing a severe illness with a low-grade fever (dehydration and possible infection), nausea and vomiting, abdominal pain, and tenderness (gastric atony and dilatation) as an acute abdominal condition needing surgery when the true cause of the illness is diabetic acidosis. Patients with an illness of this type sometimes simulate acute appendicitis very realistically.

The diagnosis of diabetic acidosis or coma must be made with great urgency, because minutes in the early treatment of this condition are worth hours later.

VIGOROUS SPECIFIC THERAPY

While the specific measures for treatment have been the subject of argument for decades, disputants have generally agreed that adequate insulin and correction of dehydration are (1) *fundamental*. The other, or ancillary, measures could be labeled (2) *useful accessories* and (3) *theoretical advances* ("sometime things").

1. THE FUNDAMENTALS

Adequate insulin must be given early and in sufficient amounts to stem the tide of acidosis. The patient's supply of insulin is depleted and this deficit, abetted by acidosis and possible infection, may be responsible for a crescendo of insulin resistance. Immediate availability of 20 u. of crystalline insulin is often worth 200 u. later in the day, and even 2,000 u. the next day may well be too late. Unger[13] suggests an initial 100 to 250 u., mostly by vein, with subsequent hourly doses of 50 to 100 u. of crystalline insulin. Tolstoi[1] has suggested 25 u. at one-half-hour intervals but this would appear to be a therapeutically coy approach that might be adequate in early acidosis but certainly not dynamic enough for the swifter, toboggan-like course of severe ketoacidosis. Bradley[14] points out that many factors, including size of the patient, initial blood glucose level, and duration of diabetes, help determine the insulin need and he offers a physiologically sound but complex formula for treatment. The Joslin Clinic[15] recommends 50 to 100 u. of regular insulin at once for adults. If the blood sugar is more than 300 mg. per 100 cc. and if the blood CO_2 is 9 mEq. per liter (20 volumes per cent) or less, the dose is repeated at once. Serial blood sugar and CO_2 determinations are done and hourly insulin at the rate of 50 to 200 u. is given according to the progress of tests. In youngsters, particularly those with recent onset, insulin must be given much more cautiously (initial dose 10 to 40 u. of crystalline insulin).

A practical scheme for determining the initial insulin dose may be accomplished by using the rapid plasma or serum acetone test. This scheme of treatment utilizes only the 4 plus readings. This elimination of soul searching regarding minute differences of color interpretation is important because anyone will immediately recognize a 4 plus reading, while there may be considera-

TABLE 1

LABORATORY AIDS IN DIFFERENTIAL DIAGNOSIS OF COMATOSE PATIENTS

	Plasma or serum acetone	*Blood sugar*	*Urine sugar*	*Blood CO_2*
Diabetic acidosis	++++	high	high	decreased
Hypoglycemia	0	low	0 or +*	normal
Uremia	+ or ++†	normal	0	decreased
Cerebrovascular accident or skull injury	0	may be high‡	0 or +§	normal

*It is not impossible for the urine to have been present in the bladder for some time with a glycosuria representing a previous hyperglycemia.

†While blood acetone may be elevated, the acetone test is only minimally positive as compared with that in diabetic acidosis.

‡Hyperglycemia is sometimes found following trauma to the head or after cerebrovascular accidents.

§Glycosuria subsequent to conditions noted above ble wasteful indecision concerning differences at the lower end of the color scale. In fact, this method uses either 100, 50, 25, or 10 u. for each dilution with 4 plus, depending on the patient (table 2). For example, if only the undiluted and 1 in 2 dilutions show 4 plus, the immediate dose would be twice the basic dose. Samples with the 1 in 4 and 1 in 8 dilutions would be ignored since the acetonemia would be much less than 4 plus.

TABLE 2

SERUM OR PLASMA ACETONE TEST AS BASIS FOR DETERMINATION OF INITIAL INSULIN DOSE IN TREATMENT OF DIABETIC ACIDOSIS

Serum or plasma acetone if ++++	*Units of crystalline insulin given°*			
	Adult	*Age 16-10*	*Age 9-5*	*Infants*
Undiluted	100	50	25	10
1 in 2 dilution	200	100	50	20
1 in 4 dilution	300	150	75	30
1 in 8 dilution	400	200	100	40

°With the initial dose, one-half can be given intravenously.

The reason for intravenous injection of half of the first dose is that (a) the insulin is immediately available and (b) the shock frequently accompanying diabetic coma might still further delay absorption of insulin from the site of injection. Multiple sites of insulin injection for the nonintravenous portion of the insulin are sometimes used on the theory that a substance is more readily utilized from several smaller areas than from one large deposit.

Whatever method of monitoring the insulin doses is used, serial blood sugar level or blood acetone, the test should be repeated at hourly intervals for the first several hours and then at two- to three-hour intervals until the prognostic pattern is established.

If the serum acetone method is used, the appropriate dose of insulin should be given at one- to three-hour intervals according to the number of dilutions with 4 plus acetone (figure 2). When the first definite downward break in the blood acetone pattern takes place, the time has come either to give adequate amounts of carbohydrate by mouth or to supplement the intravenous infusion with 5 per cent glucose. While the elevated blood acetone findings are usually consistent with the hyperglycemic levels, they may not always agree since they are not really measuring the same thing. The blood acetone is usually closer to the basic problem of ketoacidosis.

Early adequate insulin is probably the most important single facet in the successful treatment of diabetic acidosis. When there is reason to believe that acidosis is the primary problem, instructions to give the patient 25 or 50 u. of crystalline insulin before he leaves home for the journey to the hospital may ameliorate the acidosis to the extent that the hospital admission status may be "moderate" instead of "severe." Table 3 is an adaptation of the Joslin Clinic diabetic ketoacidosis routine.

Correction of dehydration has proved to be one of the most controversial sources of disagreement. This argument may be needless, however, since everyone agrees that the correction of dehydration is really the focal issue. Tradi-

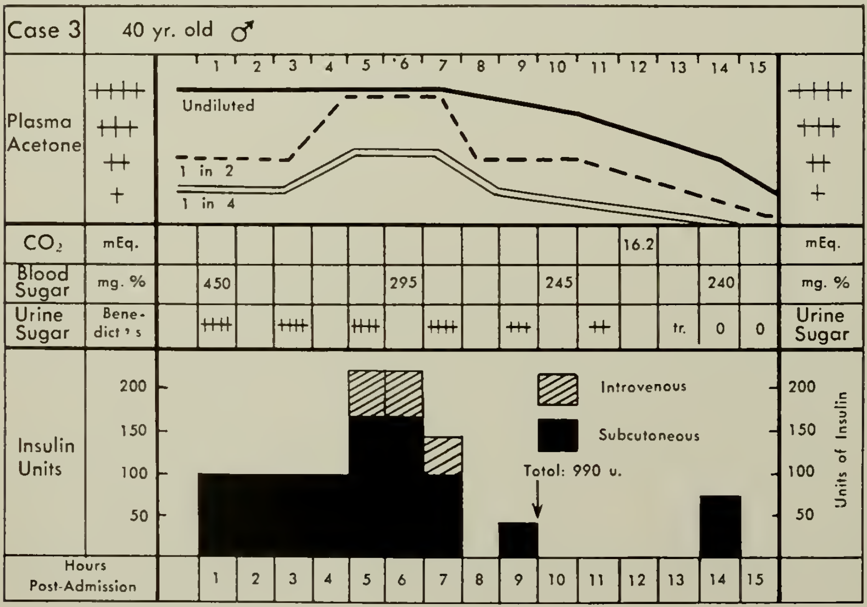


Fig. 2. Case 3 illustrates plasma acetone as guide to treatment. 40-year-old male. Duration of diabetes twelve years. Usual insulin dose 25 to 35 u. daily. In light of present knowledge, larger doses of insulin would be given less often; one-half of earliest insulin would be given intravenously, and glucose would be given at eighth hour.

tionally, normal saline has been used with great success for many years[15] and is universally available. No one can deny that normal saline is useful in the treatment of dehydration of this type. The question then really becomes: "Is this the best and most physiologically sound solution possible or available?" After all, many years have transpired since diabetic coma became a solvable problem and much more is known about electrolytes. No one seems to object to the replenishment of the fluid or the sodium, but some have argued eloquently for the inclusion of glucose[1] or alkali.[16] Many reputable institutions use glucose solutions intravenously in the treatment of ketoacidosis on the grounds that in diabetic coma the body stores of glycogen are negligible and that in general there is not enough blood glucose present to be useful in replenishing the body glycogen when insulin becomes available. Although there are different criteria used in the diagnosis of coma and individual cases treated in different hospitals can never be strictly comparable, the fact remains that coma cases in these glucose-using institutions also recover. An argument against early glucose infusion[16] is that in the first few hours the glycogen deficiency is unimportant and that even in the face of early glucose infusion there is no convincing evidence of increased glucose utilization. Many differences are more apparent than real because both Danowski,[17] whose beliefs are well documented with articulate data, and Root,[15] long an opponent of the early-glucose school, apparently agree that routine administration of glucose intravenously should be avoided. Since both these authors likewise feel that glucose can be given later in the therapeutic course to avoid hypoglycemia, once carbohydrate metabolism is accelerated by insulin, the difference becomes one of timing. Another practical reason for not using glucose early is the obscuring of this valuable guide to insulin dose and patient status.

The search for an intravenous solution "more physiological" than the commonly used 0.85 per

TABLE 3

DIABETIC ACIDOSIS AND COMA TREATMENT SCHEDULE

(adapted from Joslin Clinic)

BEFORE ADMISSION:

Alert hospital ward and laboratory of impending admission. Have solutions and equipment ready. Prepare warm bed. If diagnosis is certain, have crystalline (regular) insulin administered to patient before transporting him to hospital.

ON ADMISSION:

Laboratory tests	*Insulin*	*Fluids*	*Procedures*
Blood for rapid acetone, CO_2 content, and glucose Urine for glucose and acetone EKG	50 to 100 u. regular insulin at once, one-half intravenously, for adults After laboratory tests, give remainder of insulin*	1,000 cc. normal saline	History from patient or relative Physical examination as needed Patient kept warm Gastric lavage
Hours two to six			
Repeat blood acetone and sugar; also urine at second hour and then at two-hour intervals Blood for WBC and BUN Repeat EKG	Gravity of case may require repeating original dose May require insulin at two- to three-hour intervals	Change second I.V. to sodium lactate solution, 1,000 cc. After few hours, add potassium if indicated (see text) provided there are signs of depletion and adequate urinary output	Check for possible infection and treat as indicated Check blood pressure, pulse, and temperature hourly Watch urine output for signs of anuria Treat shock if necessary Enema if indicated
Hours six to twenty-four			
Repeat above laboratory every two to six hours as indicated Repeat EKG	Continue insulin according to laboratory data (that is, if not improving) If blood sugar and acetone levels drop satisfactorily, give regular insulin according to urine tests every two to four hours If urine test (Benedict's) is — Give insulin red ++++ — 16 orange +++ — 12 yellow ++ — 6 green or blue + — 0 Smaller doses for children	Change to I.V. glucose, 5 per cent, in saline if sharp drop in blood sugar or plasma acetone As soon as tolerated, sips of fluid by mouth (orange juice, ginger ale, broth, tea), but must be given cautiously. Limit to 100-120 cc. per hour for adults and 50 cc. for children. Discontinue if nausea or vomiting is present I.V. fluid total may have been 2 to 4 liters Follow fluid sips with soft or liquid food	As indicated

*See table 2.

cent solution of saline has led to various elaborate combinations of electrolytes. Many of these are not unsound but are often difficult to obtain. Nichols[18] states that normal saline is not truly physiological and suggests a replacement solution in which some 35 millimols of chloride are replaced by lactate or bicarbonate. The Joslin Clinic regimen now uses normal saline intravenously and then after the first liter changes to a sodium lactate solution prepared by adding one ampule (40 cc.) of 1 molar lactate to 700 cc. of normal saline and then adding enough sterile water to make up the liter. Bradley[14] sums up by stating that while $NaHCO_3$ or sodium lactate is helpful as a refinement in the correction of acidosis, this addition is not a critical factor in recovery. Danowsky[17] suggests that the use of alkali be reserved for those patients in whom acidosis is accompanied by marked changes in blood pH.

The total amount of fluid given intravenously must depend on the degree of dehydration, the size of the patient, and the cardiovascular and renal status. In the usual adult patient, 2 to 3 liters of fluid should suffice for the first six to eight hours, at which time small amounts of liquid and nourishment can be given by mouth.

Potassium replacement has been increasingly stressed. The K^+ loss depends to a large degree on the duration of the ketoacidosis prior to treatment and the intensity of factors such as diuresis. While electrocardiogram tracings are useful in suggesting hypopotassemia by serial changes such as T-wave flattening and depressed S-T segments, these are by no means infallible. Even serum potassium levels are most useful when done in serial fashion. Many patients in ketoacidosis have some K^+ deficiency and there is no danger in moderate replacement if the urine output is adequate. In the presence of adequate urinary output, if potassium depletion is suspected, 25 mEq. of K^+ per hour up to 100 mEq. can be given in the intravenous solution. After the patient is able to retain oral nourishment, sips of orange juice or broth can provide further potassium supplementation. Oral nourishment should be started sparingly in sip amounts to avoid upsetting the stomach.

Anuria is a complication of major importance to be avoided when possible. While there is sometimes a transient anuria secondary to dehydration, readily corrected by fluid replacement, severe anuria due to shock, circulatory collapse, or acute renal shutdown requires fastidious electrolyte observation. Fluid volume should be limited to 1,000 cc. of 20 to 40 per cent glucose intravenously in twenty-four hours if hyperchloremia threatens. Hemodialysis with the artifiical kidney may be needed.

2. USEFUL ACCESSORIES

While the fundamentals usually make the difference between life and death, the useful accessories determine the smoothness of the therapeutic course and can also be critical in the severe or difficult case.

Treatment of shock. While this condition is not always present, it is so frequent that precautions such as a warmed bed, additional blankets, circulatory stimulants, or, in extreme cases, blood transfusions are to be considered.

Gastric lavage. Aspiration of gastric contents and gentle lavage with warm water or sodium chloride solution is a simple and low-cost adjunct in therapy that not only rids the distended stomach of accumulated food, gastric juice, old blood, and other debris, but also pays large dividends in termination of vomiting and subsequently permits oral feeding much earlier in the recovery phase.

Concurrent infection. Infection must be sought and treated. An overt or incipient infection may have triggered the ketoacidosis. While this might be an obvious infection such as a carbuncle or pneumonia, it can also be a urinary tract infection. In the absence of a specific etiological agent, an adequate dosage of a broad-spectrum antibiotic is justifiable.

Supporting measures. Even simple measures such as supervision by a nurse experienced in diabetes treatment or the giving of enemas when indicated can become important contributions to therapy.

3. THEORETICAL ADVANCES

Fructose. There has been some speculation that fructose (levulose) might be an ideal sugar for intravenous use in ketoacidosis therapy because (1) it forms glycogen more easily than does glucose (dextrose) and (2) it does not require insulin to accomplish its entrance into the glycolysis cycle. However, this alleged advantage may be only speculative because much of the fructose becomes glucose anyway and its use in practice has shown no real advantage over the more commonly available glucose.

Colloid intravenous solutions. The use of solutions of dextran (500 cc. of 6 per cent dextran in sodium chloride) in the first hour of treatment has been advocated as a means of combating secondary circulation collapse. This appears theoretically attractive but in practice these measures (dextran, blood transfusions, etc.) have rarely been necessary in the Joslin Clinic series.

THAM, an organic amine buffer. Recently the use of tris(hydroxymethyl)aminomethane known as THAM has been described[19] as a useful adjunct in the treatment of diabetic acidosis complicated by pathologic states requiring sodium restriction. THAM is a hydrogen ion acceptor and should more readily correct acidosis with markedly diminished insulin requirement. While early reports have been encouraging, this is a complex therapeutic maneuver potentially dangerous in the hands of the inexperienced.

DETERMINING THE REASON FOR ONSET OF ACIDOSIS

While not the most urgent problem in this acute emergency condition, determination of the etiological factors in the onset of ketoacidosis may be useful for the simple reason that an incipient, untreated infection may become a fulminating one, thus adversely weighting the prognosis. More important is the fact that a certain small portion of the diabetic population have multiple bouts of ketoacidosis due to insufficient insulin, frequent infections, or general lack of understanding. A certain statistically small hard core of diabetic coma cases may not be preventable but the thousands of hospital-bed days used because of preventable acidosis admissions each year must be formidable. The key to prevention must be the teaching of intelligent and understandable routines to patients, impressing them to alert their physicians at the first sign of serious trouble. A judicious stitch-in-time telephone-directed supplemental dose of insulin may save days of expense and time-consuming hospitalization.

SUMMARY

1. Diabetic ketoacidosis and coma are among the direct emergencies that can complicate the course of diabetes mellitus.
2. These can occur in any age group, are usually caused by insufficient insulin and may be triggered by an infection, but carelessness with diet and a generally lax diabetic regimen can create a background which predisposes to this chain of events.
3. Accurate diagnosis and rapid initiation of treatment may spell the difference between recovery and disaster.
4. Rapid, crudely quantitative laboratory tests such as the plasma or serum acetone can be decisive in choosing the correct direction of early therapy.
5. While there are scientific and philosophical differences of opinion regarding the methods of treatment, all agree that adequate early insulin and fluid replacement to treat dehydration are therapeutic fundamentals.
6. Certain adjunctive measures such as treatment of shock, gastric lavage, and the search for and treatment of etiologic factors may help tip the balance in favor of recovery.
7. Some of the more exotic measures such as intravenous fructose, THAM, and others, may be advances in knowledge but are not yet considered acceptable for routine use.
8. A critical search for the cause of the onset of diabetic ketoacidosis and the education of the patient as well as his family, combined with alert clinical perception on the part of the physician, can prevent future episodes of ketoacidosis in many patients. This prevention of undue metabolic morbidity represents a public health measure in the field of general and internal medicine.

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Oral Hypoglycemic Agents

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The ideal drug for the treatment of diabetes mellitus (1) should be capable of controlling the biochemical alterations and clinical manifestations of all diabetic patients; (2) should prevent the appearance of the so-called late "complications" of diabetes such as retinopathy, nephropathy, neuropathy, and accelerated atherosclerosis and arteriosclerosis; (3) should be effective orally and preferably be given only once daily; (4) should not produce dangerous hypoglycemia; (5) should be free of toxicity; and (6) should have a known mechanism of action.

None of the antidiabetic agents available today, the insulins or the oral hypoglycemic drugs, can achieve all of these objectives.

The modern era of effective oral insulin substitutes began in 1955 with the accidental discovery by Franke and Fuchs of the hypoglycemic action of carbutamide. However, very likely the first observation dealing with an oral hypoglycemic drug was made in 1876 by Ebstein. The salicylates were then found to decrease the urinary glucose output in some diabetic patients. This fact was soon confirmed, but the matter received scant attention from clinicians. Currently there is a reawakening of interest in the hypoglycemic capability of this group of compounds. Large doses of approximately 5 to 6 gm. daily are required, an amount often found to produce significant gastrointestinal and auditory reactions. The widespread application of the salicylates in the treatment of diabetes mellitus will be restricted by such annoying reactions. Other derivatives of salicylic acid, such as orthocresotinic acid, have also been studied. Orthocresotinic acid did not cause tinnitus or deafness but again was poorly tolerated by the gastrointestinal tract. Some reports have been published on the addition of salicylates in lower doses to other antidiabetic regimens. Thus far the therapeutic results have not shown much significance.

Guanidine was the next drug found to be hypoglycemic in 1918. It proved to be most toxic. In the 1920's a number of structurally related compounds, some synthetic and others occurring in nature, were made available for clinical testing. The diguanidines, synthalin A and synthalin B, received most of the attention. These also fell into disrepute because of reports of liver damage. In the minds of some clinicians this judgment was made prematurely on uncritical grounds and might not have been justified. At about the same time still another related class of compounds, the biguanides, were synthesized. Clinical trials were not undertaken, however. Approximately thirty years later, Ungar and associates reinvestigated the hypoglycemic activity of the biguanides and reported on a new member, the phenethyl derivative, phenformin. This compound has been extensively studied and is discussed in greater detail later in this article.

The final class of compounds that has become most firmly entrenched as effective antidiabetic drugs are the sulfonylureas. An astute observation made by a clinician, Janbon, in 1942 started a chain reaction which eventually was to usher in a concept that would erupt to create the field of oral hypoglycemic drug therapy as it exists today. Janbon noted alarming symptoms in some of his typhoid fever patients who were being treated with a new sulfonamide, IPTD. These reactions he ascertained as being secondary to hypoglycemia. Subsequently the matter was turned over to the physiologist, Loubatiéres, who for the next ten years studied the mechanism of action of sulfonylureas and related compounds. The conclusions he reached are those largely held today. Strangely though, during this time no clinical investigation of these compounds was undertaken. Then, in 1955, the publication of Franke and Fuchs appeared on the hypoglycemic sulphonylurea, carbutamide, followed almost immediately by a number of like observations. This compound was also clinically evaluated in the United States. The incidence of untoward reactions was considered excessive and it was never released for general use. However, it is still widely employed in some of the European countries. Clinical trials with two other

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related drugs, tolbutamide (Orinase) and chlorpropamide (Diabinese) quickly followed. These were found to be safe and effective under certain circumstances and are discussed more fully later in this chapter.

MECHANISM OF ACTION

Sulfonylureas. Despite a huge volume of work, the precise mechanism of action of the sulfonylurea drugs is unknown. However, it has been clearly established that basic to the action of these agents is the necessity for an intact source of endogenous insulin. Whereas it is true that in the depancreatized diabetic animal one may demonstrate a potentiating effect of the sulfonylureas on exogenous insulin, this action has virtually no importance in the clinical use of these drugs in man.

Following the administration of the sulfonylureas, the initial event appears to be a betacytotropic effect, that is, the release, in some unexplained manner, of additional insulin from the beta cells. This would seem to be via a direct effect on the pancreas and not mediated through the nervous system or the other endocrines.

There are additional studies indicating an action on the pancreas. Increased "plasma insulin-like activity" has been demonstrated by the in vivo method of cross-circulation techniques. In vitro assays on the insulin-like content of pancreatic venous effluent (by the rat diaphragm or the epididymal fat pads methods) have yielded similar information. More recently an increase in actual "chemical" insulin as measured by a sensitive immunoassay has been found in the peripheral blood of diabetic persons under treatment with the sulfonylureas. Finally, there is the most fundamental demonstration that these agents are not hypoglycemic in the totally depancreatized diabetic man or animal or in the severely alloxan diabetic animal. They will reduce the blood sugar in all intact and subtotally depancreatized persons and animals or in the mildly alloxan diabetic animal.

There is controversy concerning the events subsequent to the release of this additional insulin into the portal circulation. This disharmony arises from the difficulty in unequivocally demonstrating all the metabolic consequences of an insulin injection following administration of the sulfonylureas. The other source of confusion stems from conflicting evidence on the issue of whether or not insulin has a direct action on the liver to decrease hepatic glucose output. The question remains without an answer satisfactory to everyone. It is noteworthy to recall that the sulfonylurea drugs are hypoglycemic in the hepatectomized animal. In summary, despite gaps in our knowledge, there is considerable information dealing with the mode of action of the sulfonylureas, the bulk of it indicating a "physiologic" mechanism.

Biguanides (phenformin). The precise mechanism of action of phenformin (DBI) is again unknown. Perhaps there remains more mystery concerning its manner of action than that of the sulfonylureas. Whatever the case may be, phenformin produces hypoglycemia by means differing drastically from that attributed to the sulfonylureas. Phenformin does not stimulate the beta cells to secrete more insulin and has been shown to be hypoglycemic in the depancreatized animal. Under clinical situations it is definitely more effective in the presence of some insulin, endogenous or exogenous. Phenformin curiously does not lower the blood sugar of normal subjects.

There is considerable evidence that phenformin inhibits oxidative phosphorylation in a number of tissues. There is interference in electron transport at the succinic dehydrogenase or cytochrome oxidase levels. Oxygen consumption diminishes and lactate production increases as glucose uptake increases. There are controversial opinions as to how significant a role these observations play in explaining the fall of the blood sugar. Ungar doubts the above hypothesis and points out that the in vitro concentration of phenformin required to inhibit tissue oxidation is far in excess of that which is found in vivo following hypoglycemic doses of this agent. To be stressed is the singular lack to date of any serious toxicity resulting from phenformin. This is most unusual for a drug which is postulated to have such an "unphysiologic" mode of action as to inhibit oxidative metabolism.

CLINICAL USE

As mentioned previously, an intact beta cell is indispensable to the action of the sulfonylureas. The reason these drugs proved to be relatively ineffective in the "juvenile" diabetic patient but exerted hypoglycemic activity in the "adult-onset," stable patient becomes apparent. The autopsy studies of Wrenshall and associates had shown that the pancreas of the "adult-onset" diabetic patient contained significant amounts of extractable insulin, whereas that of the "juvenile" patient was practically free of the hormone. The diabetic patient most likely to achieve successful control on chronic tolbutamide or chlorpropamide therapy can be characterized as one with (1) an onset of diabetes after the age of 35 to 40, (2) an insulin requirement of less than 30 to 40 units a day, and (3) no history of serious ketoacidosis.

The duration of diabetes and the duration of previous insulin therapy appear to bear less on the ultimate responsiveness of the maturity-onset group. In the juvenile group these drugs possess some hypoglycemic activity when started shortly after the onset of diabetes but, within months, effectiveness is lost. In a few studies the obese patient has responded better than the nonobese patient.

When the sulfonylureas were first introduced, one of the major issues was that of the transfer of the patient from insulin to oral therapy. Two schemes were advocated—either to gradually decrease the insulin and simultaneously increase the oral drug or execute the switch abruptly. The first was safer but more prolonged. In any event this trial could generally be conducted at home. A cooperative, intelligent patient was required, one who would test the urine for sugar and acetone several times daily during this transition. At the first appearance of ketone bodies, the attempt was halted and insulin restarted.

The transition from insulin to oral hypoglycemic therapy is scarcely an issue today. It is safe to assume that by this date virtually every diabetic patient under treatment with insulin since 1956, the year the first sulfonylurea was released, has been contemplated for oral therapy and such a replacement attempted. At present the physician is confronted with the newly discovered diabetic patient. When it appears that dietary measures alone are inadequate, the patient may be considered for insulin or oral hypoglycemic therapy.

The patient possessing the characteristics listed previously is the ideal candidate for sulfonylurea drug therapy. Our first choice would be tolbutamide, with chlorpropamide second. We favor tolbutamide because the overall incidence of untoward effects in over 9,000 patients has been 3.2 per cent. Very few have been of a serious nature. In over 5,000 patients on chlorpropamide, reactions have developed in approximately 8 per cent. At least potentially, some of these are of a more disturbing quality, that is, for example, the occurrence of an intrahepatic, cholestatic jaundice. Tolbutamide possesses the relative disadvantage of requiring a three-times-a-day dosage inasmuch as its plasma half-life is brief, four to eight hours. Chlorpropamide has a half-life of over thirty hours, and the total daily dose may be given at one time. The usual dose of tolbutamide is 0.5 to 2 gm. a day. The daily requirements for chlorpropamide are 0.125 to 0.5 gm. For some patients chlorpopamide proves to be somewhat less expensive. It should be pointed out that the monthly bill for drugs is definitely greater when using any of the oral hypoglycemic agents, including phenformin, than when using insulin.

As mentioned previously, the toxic effects from the use of either of the two sulfonylureas are few and generally mild. Most frequently they consist of gastrointestinal symptoms such as epigastric discomfort, anorexia, and diarrhea. The next most common manifestation has been skin reactions. The bone marrow has been involved occasionally. Intolerance to alcohol is a rare and curious occurrence. The jaundice seen with chlorpropamide therapy should be kept in mind. Possibly some of these episodes may have been related to a dose of chlorpropamide now considered excessive. Episodes of hypoglycemia are not common with either drug but may be prolonged for several days when secondary to treatment with chlorpropamide.

THE CHOICE OF AN ANTIDIABETIC AGENT

A variable percentage of patients after a period of adequate control will cease to respond to the sulfonylureas. Such a relapse following thirty days of therapy is known as the "secondary failure." All of the reasons for this phenomenon are unknown. At times it is obviously due to dietary excess. On other occasions this may represent exhaustion of the beta cells. Of interest though is the observation that a patient with a "secondary failure" to one sulfonylurea may at times be successfully treated by the other or that a brief return responsiveness to the sulfonylureas occurs.

It is in this area of the management of the "secondary failure" that phenformin possibly has usefulness. It is very likely that a majority of the stable diabetic patients could be controlled by phenformin alone. However, the frequency of gastrointestinal effects such as metallic taste, anorexia, nausea, vomiting, and diarrhea seriously limits such a wide application. The total daily dose is generally 100 to 150 mg., best given in divided form three times a day. There has been some experience with a sustained-release preparation of phenformin, permitting once-a-day administration. Serious toxicity to phenformin has not as yet been reported. Rarely ketonuria without hyperglycemia or glycosuria has appeared. This curious finding calls for an immediate withdrawal of phenformin and an increase in dietary carbohydrate.

Phenformin may have some place in the treatment of the ketosis-prone, insulin-dependent diabetic patient. Such "brittle" patients appear to run a smoother course when phenformin has been added to their insulin regimen. The insulin requirements may subsequently fall. However, there is no point in administering phenformin to a patient well-regulated on insulin merely to gain a reduction in the number of units injected each day.

In view of the doubt that all oral agents are really indicated in the stable patient with mild diabetes, it would seem even more dubious to create a regimen consisting of two or more oral agents given at the same time. Perhaps it remains more worthwhile to pay stricter attention to diet and body weight rather than to the satisfaction of obtaining "normal" blood sugar values.

INDICATIONS AND DOSAGES

Adult onset diabetes—mild to moderate in severity. A dietary regimen should be tried first. Reduction of weight by means of a low-fat, low-calorie diet should be carried out. If glycosuria and hyperglycemia persist after adequate trial, an oral hypoglycemic agent may be given. The usual maintenance dosages are as follows: tolbutamide, 0.5 to 2 gm. a day; chlorpropamide, 0.2 to 0.5 gm. a day; or phenethylbiguanide, 50 to 100 mg. a day. Chlorpropamide is longer acting and can be given once a day. The other preparations are best given in divided doses two to three times a day.

Adult onset diabetes—moderate to severe. Diet remains the cornerstone of therapy. Generally insulin will be required. The types of insulin have been discussed. There is no mathematical working formula for estimating dosage. This is a matter of trial and error. In the nonketotic case the physician begins with 10 to 15 units a day and then adjusts the requirements by checking the blood sugar level and the glycosuria.

Juvenile diabetes. This form is generally of the more severe, ketosis-prone variety. Insulin is an absolute necessity. Dosage varies with age and severity, ranging from about 10 to 100 units a day. It is important to instruct the patient in ketone examination of the urine and to insist that the insulin injection sites be varied in rotation so that absorption remains uniform from day to day. It should be remembered that muscular exercise, especially in children, may diminish the need for insulin. This should be adjusted in order to avoid hypoglycemia.

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PHYSICAL EXAMINATION of infants should include visualization of the tympanic membrane, since the incidence of otitis media among them apparently is higher than usually believed. The malady alone is unlikely to be fatal but may be associated with other conditions that are. Postmortem examination revealed gross evidence of chronic or acute otitis media in 11 of 29 children less than 1 year of age who died unexpectedly. Similar organisms were isolated from the brain and ear in 2 children with meningitis. In 3 infants, pneumonia was the primary disease, and, in 2 others, aspiration of vomitus was found. Pulmonary congestion and edema were discovered in the other 4.

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Juvenile Diabetes

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JUVENILE DIABETES is defined in this discussion as the form of diabetes which has its onset under age 15. These patients comprise 5 per cent of all diabetics. The frequency of diabetes among children is 1 in 2,500. The number of childhood diabetics in the United States is some 150,000. Sex distribution in childhood is equal, unlike the ratio with older patients, and the peak for the age of onset is at 11 years.

Heredity. Because the family histories of juvenile diabetics can be rechecked often and for decades, their data support the evidence that the tendency toward diabetes is inherited as an autosomal recessive trait.

From the estimated frequency of diabetes in the general population, 5 per cent, and of transmitter-carriers, 30 per cent, Steinberg has constructed a guide to diabetes susceptibility (see table 1).

Precipitating causes and symptoms. The most common precipitating factors in childhood diabetes appear to be spurts of linear growth, puberty, or transient infections. The classical symptoms of diabetes occur in childhood. Polyuria, polyphagia, polydipsia, and loss of weight are most conspicuous. The child may complain of visual disturbances, such as alternating near and far vision, and of pruritus. The disposition changes and irritability is frequent. Furunculosis occurs commonly.

Diagnosis. The diagnosis of diabetes is based upon the demonstration of hyperglycemia. The diagnostic levels for true glucose accepted by the Joslin Clinic are 110 mg. fasting, 150 mg. postprandial venous blood, and 180 mg. postprandial capillary blood. When the level of the random blood sugar is diagnostic, the performance of the glucose tolerance test is not only unnecessary but may be harmful. If the random blood sugar is normal and diabetes is suspected, the glucose tolerance test is indicated.

The utilization of glucose in early childhood is great, 3 gm. per kilogram of body weight. This amount should be prescribed for children under age 3. The standard dose of 1.75 gm. per kilogram of ideal body weight is used thereafter. For clinical testing the venous curve should be followed for two hours, the capillary for three. The peak and return values may be accepted for diagnosis. In the experience of the author, steroid priming (as cortisone 15 mg. per kilogram of body weight) has been unrewarding under age 20. No additional cases of hyperglycemia were identified in the young population.

Pathology. The histological changes in the islet tissue of juvenile-onset diabetics are more significant than those in patients of adult onset. The few cases examined by MacLean and Ogilvie at the onset of overt diabetes have shown islet hypertrophy and hyperplasia. In the fifth year of duration of diabetes, the islets were reported by these authors to have become few in number and atrophic in structure. In long-term juvenile diabetics, that is, those with twenty or more years of diabetes, the size of the pancreas has been found to be small compared with the normal. Often it has weighed less than 50 gm. in contrast to the normal of 80 to 100 gm.

The frequency of vascular damage in relation to duration of diabetes has been reported by Warren and LeCompte using standard light techniques. When the average survival in juvenile diabetes was one and one-fifth years, 25 per cent showed atherosclerosis; when it was five and one-half years, 71 per cent; when fourteen years, 83 per cent.

Assays for insulin-like activity of plasma. Assays for insulin-like activity of the serum in juvenile diabetics at recognition of diabetes have been reported by Renold and associates to equal or exceed the normal value of 100 micro-units per milliliter. This observation was found even if the patient had complicating diabetic coma. This insulin, as shown by Antoniades, is complexed with basic protein, possibly associated with the beta globulins. Gradually over a five-year period of duration of diabetes, the insulin level of the plasma has been found to be decreased, and by the fifth year this has usually fallen to zero values.

Insulin extractable from the pancreas. Paralleling the values for insulin-like activity and the

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histological changes in islet tissue, the quantity of insulin extractable from the pancreas in short-term diabetics has been shown by Wrenshall and associates to approach the normal, whereas after five years they found little or no extractable insulin in growth-onset cases.

Stages of diabetes. Over the past few years a dynamic concept of diabetes has developed. This concept concerns not only the progression of the disease through four stages but also its possible regression back one or more stages.

The four progressive stages are (1) prediabetes, (2) chemical diabetes, (3) acute overt diabetes, and (4) chronic diabetes.

Prediabetes represents the period from conception until the time when the glucose tolerance test becomes positive. Chemical diabetes is the stage in which the standard glucose tolerance test is positive. Overt diabetes is characterized by symptoms of diabetes and hyperglycemia in the random sample of blood. Chronic diabetes, by definition, is the period in which the vascular lesions are recognized by their clinical manifestations. Objectives in management of diabetes have come to be the following: (1) to hold the prediabetic stage; (2) to reverse chemical diabetes; (3) to alter the course of acute overt diabetes; and (4) to prevent, postpone, or reverse chronic diabetes.

Prediabetes. The duration of prediabetes in childhood by the author's definition is from days to fourteen and nine-tenths years. It is a much shorter period of the total disorder, diabetes, than it is in the average adult, whose longest stage is prediabetes.

The recognition of prediabetes may be made by family history rarely; this includes the offspring of two diabetics, the identical twin of a diabetic. Family history indicates the susceptibility of the kin rather than of the individual. Past history, however, may suggest susceptibility in an individual. Birth weight, so helpful in predicting maternal diabetes or even the diabetic adult, gives a negative correlation in childhood. The frequency of "large babies" in the general population is 10 per cent; ninety per cent of our childhood diabetics have weighed less than 8 lb., 14 oz. at birth.

TABLE 1
SUSCEPTIBILITY TO DIABETES

Parent diabetic + relatives on the other side	*Per cent*
Parent + Grandparent *and* aunt or uncle	85
Parent + Grandparent *or* aunt or uncle	60
Parent + first cousin	40
Parent	22
Grandparent	14
First cousin	9

The presence of congenital anomalies is significant. The erythroblastotic child with its pancreatic islet hypertrophy is suspect. The child with chronic cystic fibrosis shows a frequency of later diabetes in 1 in 65 cases compared with a frequency of 1 in 2,500 of all children under age 15.

The two chemical tests which suggest the possible future development of diabetes are the simple blood glucose and the more complicated assay for insulin-like activity. Hypoglycemia of 30 mg. or less occurring in the random sample or in the course of glucose tolerance tests deserves further investigation and at frequent intervals. The increase of insulin-like activity, consisting of an excess of both the free and complexed forms, characterized the genetic prediabetics studied and reported by Camerini and associates.

Vascular changes occur in the genetic prediabetic child. Dilatation of the venules examined microscopically in the bulbar conjunctiva was observed and reported by Ditzel in a group of offspring of the diabetic mothers of the author's series. These individuals had chemical diabetes at the time of the examination or developed it subsequently. The microvessels of the bulbar conjunctiva were examined and permanent photographic records made.

Two siblings under age 10, the offspring of two young diabetics, showed thickening of the basement membrane by standard light techniques and in renal biopsies. The thickened membrane was also observed under the electron microscope. Ear lobe biopsies of these 2 children showed characteristics seen in other prediabetics and reported by Caulfield, namely, loss of venular tone, increasing degeneration of mast cells, fibrillar connective tissue, and capillary constriction.

Programs have been planned for the prediabetic, such as the use of sulfonylureas, exercise, and regulation of diet. These programs, however, must be considered investigative in nature.

Chemical diabetes. Chemical diabetes in childhood patients appears to be of much shorter duration than in adults. In this younger age group the glucose tolerance test may be normal and within a year overt diabetes may occur. Following the programs designed by Conn and Fajans, therapeutic trials with sulfonylurea are being made. However, chemical diabetes may regress spontaneously, progress slowly or rapidly, or remain in a stationary state for years.

Overt diabetes. Overt diabetes is characterized by the presence of the classical symptoms and by the abnormally elevated level of sugar in the random specimen of blood. The onset of juvenile diabetes is typically acute. The early course is rapid and virulent. Diagnosis of diabetes is made commonly when the patient has coma or severe ketoacidosis. If diagnostic measures are delayed for several days in the presence of glycosuria, tragic results may follow.

Within a few days to a few months of the institution of antidiabetic treatment, remissions of the acute diabetic state may occur. Inherent factors influence the frequency of remissions. Remissions are more common in boys and in the age period of 3 to 11 years; their frequency in obese children is high. They are uncommon under age 3 and in pubescent girls. Aggressive insulin therapy favors their occurrence. This was emphasized first by Brush, who recommended overinsulinization at the onset of diabetes.

During the remission phase insulin requirement drops. Responsiveness to the sulfonylureas and biguanides occurs. The glucose tolerance curve may revert to normal. The average duration of the remission is fifteen months. Growth, puberty, and infections appear to terminate the remission phase. Subsequently, progression of diabetes proceeds fairly rapidly. By the fifth year of the duration of diabetes 94 per cent of the juvenile patients have developed total diabetes. Nocturnal hyperglycemia occurs. Insulin requirement rises. The responsiveness to sulfonylurea and biguanide is lost. The plasma insulin-like activity drops to zero as does the quantity of insulin extractable from the pancreas. The pancreatic islets become atrophic and few in number.

Growth. In spite of this severe metabolic defect, satisfactory growth and development are achieved. In the author's series, the average adult stature for female juveniles surviving twenty or more years of diabetes was 62 in. and for males, 68 in. In sibling studies, growth curves of diabetics were identical with their currently nondiabetic siblings.

Development. The appearance of secondary sex characteristics is delayed in the child whose diabetes starts under age 11. Using menarche as the best parameter of development, it has been found that girls whose diabetes starts under age 11 have the oldest recorded menarche, whereas women whose diabetes starts after age 18 have the earliest. In spite of retardation of development, eventual fertility is unimpaired.

The management of juvenile diabetes. The natural course of juvenile diabetes described influences present-day management. Since the eventual development of the totally diabetic state seems almost inevitable, insulin therapy is essential.

The 8 insulins available in the United States fall into 3 classes: the short-lasting quick-acting; those of intermediate action; and the very long-lasting but very slow-acting insulins. Their time, actions, and properties are described in table 2.

The choice of insulin among most workers in the field is in the intermediate group. Short-lasting, quick-acting insulins must be given at six-hour intervals. These frequent injections are neglected in the self-treatment of children and adolescents. The very long-lasting and very slow-acting insulins prevent nocturnal hyperglycemia but tend to induce nocturnal hypoglycemia. Few children can be treated successfully and continuously with one type of insulin only. They require the combination of quick- and intermediate-acting insulins soon, and when the total diabetic state develops they need insulin twice in 24 hours, before breakfast and at bedtime or before both breakfast and the evening meal.

The initial dose of insulin in the nonketotic child may be based on weight, .25 u. per pound of body weight. Regulation of insulin should be on an anticipatory basis. The tests on one day suggest the insulin program for the next day. Pre-meal specimens of blood and true pre-meal specimens of urine (the second of 2 tests) serve as the guides in management.

TABLE 2
AVAILABLE TYPES OF INSULIN

Type	*Appearance*	*Duration in hours*	*Zinc mg./100 u.*	*Buffer*	*pH*	*Action*	*Protein mg./100 u.*
Regular	clear	5–7	0–0.04	none	2.5–3.8	quick	
Crystalline	clear	5–7	0.016–0.04	none	2.5–3.8	quick	
Semi-Lente	turbid	12–16	0.2–0.25	acetate	7.0–7.2	quick	
Globin[°]	clear	18–24	0.25–0.35	none	3.4–3.8	slow	3.8
NPH[°]	turbid	24	0.016–0.04	phosphate	7.1–7.4	slow	0.5
Lente	turbid	24	0.20–0.25	acetate	7.1–7.4	slow	
PZI[°]	turbid	24–36	0.20–0.25	phosphate	7.1–7.4	very slow	1.25
Ultra-Lente	turbid	24–36	0.20–0.25	acetate	5.0–8.0	very slow	

[°] Globin insulin contains 3.8 mg. globin per 100 u.; NPH and protamine zinc insulins contain protamine in amounts of 1.25 and 0.5 mg. per 100 u., respectively.

TABLE 3

TYPICAL PATTERNS AND THEIR CORRECTION

Pattern No.	*Pre-B.*		*Pre-L.*		*Pre-S.*		*B.T.*	*Rx. of insulin*	
	U.S.	*B.S.*	*U.S.*	*B.S.*	*U.S.*	*B.S.*	*U.S.*	*Rapidly-acting*	*Intermediate*
I	+		+		+		+		↑
II	0		+		0		0	↑	
III	0		0		+		+		↑
IV	0		0		0		+	Subtract carbohydrates from supper. Give at 4 P.M. or at bedtime	
V	+		0		0		0		Add bedtime intermediate
VI	+		0		0		+	Add mixture rapid and intermediate; Give before supper	
VII	0	200	+	150	0		tr.		Add bedtime intermediate
VIII	+	150	0	100	0	100	tr.	Reduce	Increase

Reductions of insulin are based best upon the occurrence of hypoglycemic reactions. The quantity of insulin to add or subtract varies from 0.5 to 10 u. The requirements for insulin are decreased with exercise and increased with complications such as infections and ketoacidosis. The reason for the former is unknown. In the latter there appears to be an inhibitor of insulin not present at other times.

Untoward effects of insulin include hypoglycemic reactions, lipodystrophies, allergies, infections, resistance, and revelation of latent epilepsy or low convulsive threshold.

Reactions. Insulin reactions result from overdoses of insulin, overexercise, inadequate food intake or utilization, and incorrect time relationship between food and insulin and exercise. Reactions occur when the level of blood sugar lies between 25 and 50 mg. The signs of hypoglycemia are pallor, sweating, trembling, paralysis, convulsions, and unconsciousness. The symptoms include nervousness, sweating, and rapid heart action.

The more severe lesions occur in phases: cortical, subcortical, and mesencephalic. They may be related to the medulla oblongata or even the respiratory and cardiovascular centers.

Although hypoglycemic encephalopathy occurs, permanent brain damage or death from hypoglycemia has occurred rarely in the author's series of diabetics.

The treatment of mild hypoglycemia is carbohydrate by mouth, such as orange juice, Coca-Cola syrup, and the like. Moderately severe cases respond to glucagon administered intravenously. Parents may be taught the use of subcutaneous glucagon, 1 mg., or adrenalin chloride solution, 1:1,000 in 0.3-cc. doses. Severe cases may require not only glucagon but intravenous glucose as a 5 to 50 per cent solution. Constant venoclysis and supportive measures such as fresh whole blood, steroids, anticonvulsants, repeated lumbar puncture, and airway may be indicated.

Lipodystrophies. Lipodystophies are of two types, atrophy and hypertrophy. Insulin hypertrophies are due to hypertrophy of adipose tissue cells and recede when the hypodermic injections are relocated. Insulin atrophies disturb patients and their families more than do hypertrophies. The atrophic areas in arms and thighs become a cosmetic problem. They may be mistaken for muscle atrophy and may suggest wrongly to the patient that possible areas for insulin administration are lost. This thought develops into the eventual probability of inability to take essential insulin. There is no known preventive program. Regeneration of the atrophic areas occurs spontaneously in nearly all patients. The time required for complete regeneration may be from two to eight years.

Allergies to insulin in the form of urticarial wheals are common. The continued use of insulin usually desensitizes the patient. Severe forms of allergies are rare in youth.

Revelation of low convulsive thresholds occurs. Appropriate anticonvulsant therapy should be used, and efforts to maintain the level of blood sugar between 150 and 200 mg. are encouraged.

Oral hypoglycemic agents. Oral hypoglycemic agents do not affect the hyperglycemia of juvenile diabetes except in the remission phase. In the author's experience, sulfonylureas have not potentiated the action of exogenous insulin. Phenethylbiguanide, by mechanisms which have not been clarified, potentiates the action of exogenous insulin. In dose ranges of 5 to 150 mg., 50 per cent of the required insulin may be replaced. The most important indication for combined therapy is in the treatment of patients who develop hypoglycemia without warning.

Diet. Three dietary plans have been used in the management of the diabetic child: free, normal, diabetic, or regulated. The free diet, defined as feeding on demand, has been abandoned for the most part. The term, "normal diet," refers

TABLE 4

DEGREES OF CONTROL OF DIABETES

	Perfect	*Good*	*Fair*	*Poor*	*Dangerous*
Glycosuria, gm. per twenty-four hours	0	5 to 10% carb. intake	25 to 50	50 to 100	100 to 500
Blood sugar	Normal P.C. and A.C.	Normal A.C.	to 249	250 to 490	500+
Cholesterol	< 200	< 200	< 230 to 300	300 to 499	500+
Ketonuria	0	0	+	++	++++

usually to the partition by percentage of carbohydrate, protein, and fat. In this prescription the concentration of carbohydrate is respected. The calories are prescribed 50 per cent as carbohydrate, 15 per cent as protein, and 35 per cent as fat. The percentage of carbohydrate is lower in the "diabetic" diet. Hartman favors 35 per cent of the diet as carbohydrate and 50 per cent as fat. The juvenile patient in the author's series receives by prescription 40 per cent of the calories as carbohydrate, 20 per cent as protein, and 40 per cent as fat.

Calories may be prescribed by age, age and weight, height, or basal metabolism calculated by surface area. A practical rule consists of 1,000 calories at age 1 and 100 calories added yearly until growth is completed. The end of linear growth occurs at 13 or 14 with girls. Adolescent diabetic girls tend to develop obesity. At this time a diet of adult type may be prescribed, 30 calories per kilogram (15 per pound) of body weight. A rule for age and weight is 100 calories per kilogram at age 1, 75 at age 5, 50 at age 10, and 40 at age 15. Another basis is 35 calories per inch. A higher caloric diet results from doubling the theoretical basal metabolism.

SAMPLE DIET

Control of diabetes for the juvenile patient may be classified as perfect, good, fair, poor, or dangerous. (See table 4.)

Carbohydrate	*Protein*	*Fat*	*Calories*
201	97	99	2,083

Breakfast

1	egg		
15 gm.	bacon	2	strips
15 gm.	oatmeal (dry)	¾	cup
or 120 gm.	oatmeal (cooked)	½	cup
10 gm.	butter	2	tsp.
180 gm.	milk	6	oz.
100 gm.	orange		small
24 gm.	bread	1	slice

10:30 A.M.

2 Uneedas

Dinner

75 gm.	meat	2½	oz.
150 gm.	3% veg.		freely
75 gm.	6% veg.	½	cup
10 gm.	butter	2	tsp.
240 gm.	milk	8	oz.
200 gm.	orange		large
24 gm.	bread	1	slice

3:00 P.M.

2 Uneedas plus 120 gm. milk (½ cup) or
1 pk. peanut butter "Nabs"

Supper

90 gm.	meat	3	oz.
150 gm.	3% veg.		freely
75 gm.	6% veg.	½	cup
10 gm.	butter	2	tsp.
240 gm.	milk	8	oz.
150 gm.	orange		medium
75 gm.	potato		medium
24 gm.	bread	1	slice

Bedtime:

2 Uneedas plus 120 gm. milk (½ cup)

Sandwich lunch in place of noon meal:

75 gm.	meat	2½	oz.
48 gm.	bread	2	slices
10 gm.	butter	2	tsp.
240 gm.	milk	8	oz.
150 gm.	orange		medium

Exercise. Timed exercise is an adjunct to dietary and insulin therapy. It is most useful after meals.

Education. The initial stabilization and education of the juvenile diabetic is achieved most easily by hospitalization. Living in is desirable. In the case of younger children, mothers may stay with the hospitalized child weekdays; fathers, on Saturday and Sunday. With intensive instruction the initial hospitalization varies from seven to fourteen days. During this time parents and children have learned to test the urine for sugar and acetone and do a simple quantitative test for glycosuria. They learn to weigh and calculate the diet. They know the symptoms of hypoglycemia and its treatment with oral carbohydrate or subcutaneous glucagon and adrenalin. They know how to measure and administer and adjust insulin. They learn to recognize ketoacidosis and coma, to change diet and insulin on days of illness. They are taught the meaning of chronic diabetes. After their discharge they report once a week for four weeks, then monthly for a year, and at least every three months thereafter.

The initial stabilization is carried out best in ambulatory hospital units. Summer camps are valuable adjuncts permitting treatment under more normal conditions, education at the child's level, and proper utilization of exercise.

Complications. The significant complications of overt diabetes are two: infections and ketoacidosis. To ketoacidosis the diabetic child is most susceptible. This susceptibility is related in part to the degree of insulin defect which is nearly total but also is due to the fact that the clinical causes of coma—omission of insulin, infection, and overeating—occur more commonly in childhood. Juvenile patients constitute 10 per cent of Joslin Clinic diabetics. They number 40 per cent of coma cases.

The progression of ketoacidosis to coma is rapid in the child. The symptoms usually but not necessarily follow this order: fatigue, unquenchable thirst, nausea, violent vomiting, abdominal pain, hyperpnea, drowsiness, and, finally, unconsciousness. The time interval in childhood is hours to days.

The management of ketoacidosis comprises replacement of insulin, correction of dehydration (the loss is 10 per cent of body weight), and repair of electrolytes.

The intial dose of insulin may be made on the basis of body weight, 1 u. per pound of body weight. Above the age of 10, if the blood sugar is 500 to 750 or 1,000 mg., 100 to 200 u. may be given additionally; if the blood sugar is over 1,000 mg., 300 u. may be given additionally. Subsequent doses are adjusted by response of the blood sugar to the early doses. Adequate insulin has been given when a 50 per cent fall of blood sugar occurs.

Half of the weight loss should be replaced as fluid. For simplicity, normal saline may be employed. Because of the entity of lactic acidosis, bicarbonate may become first choice when alkali is needed. Its use is correlated with pH values.

When potassium levels fall to 3 milliliters or below, potassium is replaced, 40 to 80 milliliters or more as indicated.

Infections may complicate acute overt diabetes. These are most commonly found in the urinary tract or skin. Osteomyelitis or tuberculosis is uncommon today. They respond to appropriate chemotherapy or treatment with antibiotics. Necrobiosis lipoidica diabeticorum may be a prediabetic sign or may manifest itself early in the course of overt diabetes. These lesions tend to disappear spontaneously after many years. Xanthoma and xanthosis occur rarely today, and the juvenile diabetic cataract has almost disappeared.

Neuropathies, including polyneuritis, foot drop, and so on, may be manifest at diagnosis; and gastropathy, after many years' duration.

Chronic Diabetes. By definition, chronic diabetes is the stage of diabetes in which vascular lesions are evident by clinical tests.

The present-day concept of the interrelation of vascular disease and diabetes is influenced by the evidence of vascular anomalies in prediabetes. It is evident that these are an inherent part of the diabetic syndrome or are possibly gene-linked entities. Today's controversy concerns the relationship of control to the progression to malignant manifestations of vascular disease. Some workers in the field maintain that progression is inevitable and is uninfluenced by chemical control of diabetes; others maintain that good control postpones the clinical lesions and prevents progression to malignant states.

Age. Vascular lesions are not recognized under age 10. They are found in only 7 per cent under age 20 but in 63 per cent of juvenile cases by age 30. In the first five years of diabetes they have been found in 1 per cent; by ten years, in 2.5 per cent; and by thirty years, in 90 per cent. The order of the appearance of the lesions is retinopathy, calcified arteries, proteinuria, and hypertension.

The retina is obviously the site where the influence of various factors precipitating or reversing lesions can be studied best. Rapid changes occur in relation to infections and bouts of ketoacidosis. Rapid progression of benign lesions to malignant is observed in relation to acute severe ketoacidosis, to infections, to thyroid toxicity, and to chronic, gross, poor control. Reversal of benign lesions has been associated with correction of these defects. Regression, in part, of malignant lesions has sometimes been affected similarly.

Psychological problems. Psychological problems occur. Thus, under age 6, rejection of insulin and breaks in training may occur; in latency, between 6 and 11, the maximum cooperation is achieved, sibling rivalry being accentuated; in adolescence, the struggle to achieve the pattern of the group is complicated. Group therapy helps the average case.

Prognosis. The expectation of life is three-fourths that of normal. Juvenile-onset diabetics have attained an age of more than 60 years. The chief cause of death has become myocardial infarction.

The achievement level is high. More have been graduated from college and entered professions than have the expected number in the general population.

Today the outlook for juvenile-onset diabetes is better than ever before. Even without new discoveries, many may expect to live to the seventh decade. It appears that vascular disease may be postponed or reversed, in part. Attempts have been made to alter overt diabetes by overinsulinization and the use of islet cell protectors and transplants. Large-scale programs to reveal chemical diabetes are in progress, and it appears to be possible to identify prediabetes.

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EXUDATIVE ENTEROPATHY secondary to Hirschsprung's disease causes typical roentgenographic changes in the colon. In addition to an aganglionic segment, the colon shows the characteristic mucosal changes associated with loss of plasma proteins from the intestinal tract. Colon walls are thickened and lined with unulcerated pseudopolypoid irregularities. Extent of the changes depends on the degree of protein loss. Both hypoproteinemia and mucosal changes in the colon disappear after resection of the aganglionic segment. Characteristic mucosal changes were seen in 4 children with exudative enteropathy and infantile Hirschsprung's disease. In another 6, exudative enteropathy was associated with repeated bouts of nonspecific gastrointestinal disturbances, and roentgenographic findings were not diagnostic. As a control study, roentgenograms were made in 6 nephrotic patients; only 1 showed a slight localized coarsening of the mucosa in the proximal descending colon.

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Pregnancy Complicating Diabetes

A Therapeutic Challenge

BLAIR HOLCOMB, M.D., and JOHN W. PARTRIDGE, M.D.
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IT IS ESTIMATED that, at present, 1 per cent of our U. S. population has known diabetes mellitus, 1 per cent unknown diabetes, and 3 per cent, potential diabetes. A total of 5 per cent of our population, or 9 million people, have diabetes or prediabetes. In primitive populations the disease is virtually unknown. The incidence has steadily risen in the civilized world since the discovery of insulin, and it can be assumed that in the future, with our world population explosion, the diabetic population will also "explode." This, of course, means that all of us physicians will be seeing more patients with diabetes and caring for more diabetic pregnant women.

With the refinements in the care of juvenile diabetes which we have seen in recent decades, many girls are coming to the childbearing age after a "diabetic lifetime" of ten to twenty years. These women are more prone to the vascular disease accompanying diabetes, so we are seeing an increase in the complications of pregnancy which lead to fetal mortality. In this discussion we will outline some of the problems in diagnosis and treatment which commonly arise in the management of these women whose pregnancy is complicated by diabetes mellitus.

DIAGNOSIS

Pregnancy is diabetogenic.[1] It also causes a marked increase in glomerular filtration rate leading to a lowering of the renal threshold for glucose and a resultant renal glycosuria. Diagnosis of diabetes complicating pregnancy in a previously apparently normal woman may at times be quite difficult. Where suspicion exists, a glucose tolerance test should be done because fasting blood sugars can not be relied upon and a single postprandial blood sugar is often equivocal.

Using the Somogyi-Nelson true blood sugar method the glucose tolerance test is performed by administering 100 gm. of glucose orally after an overnight fast. Blood sugar values of less than 100 mg. per cent fasting, less than 160 mg. per cent at one-half hour, less than 160 mg. per cent at one hour, and less than 110 mg. per cent at two hours are considered normal. A definite diagnosis of diabetes mellitus can be made if the one and one-half hour glucose is greater than 140 mg. per cent or the two-hour test is 120 mg. per cent or above.

Even glucose tolerance tests may be equivocal and may require repeating later in pregnancy. A high index of suspicion is required to make the diagnosis in some instances. This can be aroused by a medical history which includes such items as infertility, multiple miscarriages, hypertension, toxemia in previous pregnancies, hydramnios, infants weighing more than 9 lb. at birth, unexplained neonatal deaths, or presence of hypertrophic or hyperplastic islet cells in the pancreas of autopsied infants who died in the neonatal period. A family history of diabetes mellitus should always alert the physician to its possible presence in the pregnant patient. The absence of evidence of diabetes early in pregnancy does not preclude its later development.

It is of great interest that the medical histories of women developing clinical diabetes at age 40 or beyond often include one or more of the complications listed above. Progressive increase in the birth weights of infants of multiparous women who eventually develop clinical diabetes is common. If this single clue were to be followed up, many mild cases of diabetes would be discovered in a much earlier stage of development. Pregnancy may precipitate permanent diabetes. It may cause a transient diabetes which entirely clears after delivery or it may produce in the "prediabetic" woman only a "glucose tolerance" diabetes, otherwise unrecognizable clinically. White in her series noted that only 5 per cent of her women of childbearing age or older had diabetes precipitated by pregnancy. Crampton,[2] however, notes that the greater statistical occurence of diabetes in women can be entirely accounted for by parity and that the incidence in men and in postmenopausal women who have

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not borne children is the same. This may very well mean that pregnancy is a significant etiologic factor in diabetes in women.

TREATMENT

Although the basic treatment of diabetes during pregnancy is the same as that during the nonpregnant state, there are multiple additional factors to be considered. The aim of management includes (1) meticulous control of the diabetes and consequent prevention of acidosis; (2) prevention of excessive weight gain, toxemia, hydramnios, and fetal loss; (3) prevention and treatment of any infection, especially of the urinary tract; and (4) careful selection of the time for delivery.

Diet. Diet has always been a cornerstone in the treatment and control of diabetes and it is especially vital during pregnancy. Many authorities believe that a qualitative diet may be adequate for adult-onset, mild to moderate, stable diabetes, but it is hopelessly inaccurate for control of the juvenile or the pregnant diabetic patient. In calculating the patient's diet, we attempt to provide an adequate protein intake, usually approximately 1.5 gm. per kilogram of body weight, which amounts to 80 to 100 gm. of protein generally. Enough carbohydrate and fat are provided to meet caloric needs, but weight is watched closely and calories are adjusted downward if it appears that the patient will gain more than her ideal of 20 lb. The diet is divided into 3 equal meals and interval feedings are added if indicated for improved chemical control. We do not hesitate to restrict carbohydrate and fat significantly to prohibit weight gain as long as protein intake remains adequate.

Insulin. Insulin requirement is an entirely individual thing. In those few women who will have adult-type stable diabetes during their pregnancy or who are diabetic only during pregnancy, diet alone may suffice. Usually even these women will require small amounts of insulin, usually a single dose of intermediate-action insulin during the last trimester of pregnancy. Usually we prefer to mix regular and intermediate (Lente or NPH) in a single morning insulin dose to prevent the excessive rise in blood sugar which occurs after breakfast and which cannot usually be adequately controlled by intermediate-action insulin alone. The insulin requirement generally rises gradually throughout pregnancy but frequently takes a substantial jump at or near the onset of the last trimester.

The great majority of pregnant diabetic women, of course, have the juvenile, unstable variety which had its onset some five to ten years prior to the pregnancy. These women are difficult to control, at best, and pregnancy compounds the problem. Frequently their diabetes has been adequately controlled with a quantitative diet plus a single dose of mixed regular and intermediate insulin taken before breakfast daily. Often, however, unstable diabetes is controlled best with a "split dose" of insulin, a small dose of intermediate-action insulin being given before supper or at bedtime to control the rise in blood sugar which occurs in this type of diabetes during the early morning hours and after breakfast, before the morning dose of regular insulin can become effective. The total daily insulin requirement is divided so that two-thirds is given in the morning and approximately one-third at night. Of the morning portion, two-thirds is intermediate- and one-third, short-action insulin. Invariably, in our experience, women with unstable diabetes should be switched to a split dose of insulin for improved chemical control, usually during the latter half of pregnancy but always by the beginning of the third trimester.

Immediately after delivery, insulin requirements may drop precipitously for approximately twenty-four to forty-eight hours but then usually return to prepregnancy levels. During the first 24 hours post partum, the insulin dose is usually less than half of that given the previous day.

Insulin technique during pregnancy is important. Patients should be trained to give insulin subcutaneously, under the fat, not into it, as a routine. Usual sites for the patient herself to use are the thighs and abdomen; arms and intrascapular areas are better sites for other injectors. Since an injection under the fat cannot be properly given unless two hands are used, no patient should ever inject her own arms with insulin. During pregnancy the thighs should not be injected since venous stasis delays insulin absorption. Abdomen, arms, and back should be used exclusively to avoid delayed absorption of insulin and hence unpredictable control. The husband may be taught to inject into the scapular areas. Poor insulin technique or use of thighs as injection sites during pregnancy may exaggerate the postpartum hypoglycemic response. An automatic injector is never used because accurate placement of the needle in the potential space between subcutaneous fat and muscle is impossible.

The oral hypoglycemic agents, tolbutamide (Orinase), chlorpropamide (Diabinese), and phenethylbiguanide (DBI) have no place in the management of diabetes during pregnancy. If patients are taking these agents at the onset of pregnancy, they should discontinue them.

Urine. Because of the lowered renal threshold for glucose, the pregnant patient may need to spill more sugar than when she is not pregnant in order to avoid frequent insulin hypoglycemia. However, the renal threshold for the individual patient should be determined because the general rule may not necessarily hold for her. Frequent blood sugars (every two to three weeks), urine specimens tested with Benedict's solution or Clinitest (Testape and Clinistix are too sensitive to small amounts of glucose) at least twice daily before breakfast and supper, and twenty-four-hour urine specimens for quantitative sugar once or twice monthly should be run to insure adequate supervision of chemical control.

The patient should see her physician at least at monthly intervals during the first trimester and at least every two weeks thereafter for adequate supervision of both her medical and obstetrical problems. At these visits a voided urine specimen must be checked for sugar and albumin, the weight obtained, and blood pressure recorded, in addition to the usual obstetrical observations. Periodic funduscopic examinations should be made for the appearance of retinopathy.

Obstetrical care. Some physicians restrict sodium intake sharply from the onset of pregnancy. It has been our practice and that of others[3–5] to advocate avoidance of extra salt at the outset but to make no further restrictions until obvious fluid accumulation begins. At this time sodium is restricted to 0.5 gm. and a Chlorthiazide diuretic is usually begun. In the vast majority of diabetic pregnancies it has not been necessary, in our experience, to hospitalize until a day or two before anticipated delivery. This has not been the experience of some other authors.[6,7] We are convinced that our low incidence of need for hospitalization, negligible incidence of ketoacidosis, and overall high fetal salvage rate[4] are the result of thorough patient education and close chemical control.

The most important decision the physician has to make in the latter portion of the pregnancy is the optimum time for delivery. The presence of marked or massive fluid accumulation, hypertension, albuminuria, or polyhydramnios all contribute insults which may cause intrauterine death. Ketoacidosis is also a principal cause of fetal death before the thirty-second week. Toward the end of the pregnancy all the above conditions, with the exception of acidosis, tend to be more apt to appear. After the thirty-seventh week of gestation, intrauterine death is very common. Although the reason for this is unknown, it may be because of inadequate transplacental nourishment due to premature senescence of the placenta. In addition to intrauterine death, the hazards of delivery prior to the thirty-fourth week are great for the infant because of the appearance of hyaline membrane disease in infants more than six weeks premature.

Hence it is in many instances difficult to tread the fine line between too early a delivery and one too late. Most authorities[2–5, 8–11] agree that the optimum time for delivery is between thirty-six and thirty-seven weeks' gestation at the time when the fetal distal femoral epiphyses first appear.

Mode of delivery, vaginal or cesarean section, depends only on obstetrical considerations according to Crampton,[2] Wilson and Morrison,[11] Tolstoi,[6] and White.[8] Our experience and that reported by Stephens et al.[5] is entirely with cesarean section done under spinal anesthesia. Patients with mild diabetes requiring little or no insulin, transient diabetes, or diabetes of very recent onset may be allowed to go to term and vaginal delivery where it is felt that prognosis for the fetus is the same as for that of a nondiabetic mother. Otherwise we feel that the infant has a better prognosis for life and the mother less opportunity of developing a vascular accident with cesarean section than during either a short or a prolonged natural labor. The recent report of Stephens et al.,[5] in which this method is followed, seems to vindicate this position since their fetal salvage* of 91 per cent is the best yet reported for unselected diabetic pregnancies; it approaches that of nondiabetic pregnancies, which is 97 per cent. The average worldwide fetal salvage is approximately 78 to 80 per cent in unselected diabetic pregnancies. In White's series,[9] fetal salvage was 88 per cent. Maternal mortality was no greater than in the nondiabetic pregnancy. She has also advocated the use of female hormones throughout pregnancy because of the abnormally high serum and urine chorionic gonadotropins and low urinary estrogen and pregnanediol levels found in diabetic pregnancies. The comparable studies of Stephens,[5] however, which were identical to White's except for the omission of hormones, suggest that their use is unnecessary.

In preparation for cesarean section, our patients are given 1,000 cc. of 5 per cent invert sugar in water intravenously to start about one-half hour prior to surgery. To this is added a small amount of regular insulin, usually less than 5 u., and this is to run through surgery. One-third of the patient's usual morning dose of intermediate-action insulin is given subcutaneously at the same time. Following surgery and one-half hour after completion of the intravenous drip (three to four hours), a blood sugar is obtained and subsequent insulin and fluids ordered according to need. Oral feedings are generally not begun until bowel tones are again normally active. In this way much severe gaseous distension is avoided.

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*Fetal salvage indicates survival beyond the neonatal period whereas viability rate refers to the percentage of infants born alive, some of whom may not survive the neonatal period.

CLASSIFICATION

It is clear from the studies of Priscilla White and others that the viability rate and fetal salvage from diabetic pregnancies relates primarily to the degree of vascular disease present in the mother and that the extent of this relates closely to total duration of diabetes. Her classification of fetal risks has been used by many subsequent authors (see table).

CLASSIFICATION OF DIABETIC MOTHER[9]

Class A
Glucose tolerance diabetes
Class B
Onset of less than ten-years' duration
No vascular lesions
Class C
Onset ten to nineteen years
Duration ten to nineteen years
No vascular lesions
Class D
Onset before age ten
Duration over twenty years
Retinitis or calcified leg vessels
Class E
Calcified pelvic arteries
Class F
Nephropathy

It would be logical to suppose that the more vascular complications present in the mother, the lower the rate of fetal survival; this was true in White's original group:[10] class A, 100 per cent; class B, 67 per cent; class C, 48 per cent; class D, 32 per cent; class E, 13 per cent; and class F, 3 per cent. However, time and experience have changed so that at present a majority of patients seen in specialized centers are class C to F, and there seems to be little difference in fetal salvage rates among classes B, C, and D[5] which constitute the majority of patients seen. Class B probably constitutes more of a problem than one would anticipate, because of the rapid advent of increasingly severe diabetes in women unaccustomed to dealing with more than a mild problem. The better salvage rate in C and D is probably related to better care and experience in recent years.

COMPLICATIONS

The most feared complication in diabetic pregnancy in the past has been ketoacidosis. There is a 50 per cent increase in intrauterine deaths in patients who have had ketoacidosis, congenital defects and abortion being most common when acidosis occurs during the first trimester. Hyperemesis may be a real problem in diabetes because of the difficulty of chemical control and the danger of ketoacidosis.

Hydramnios and toxemia are most prevalent in patients in whom renal and vascular degenerative diseases have developed. The incidence of toxemia in most series approaches 20 per cent, though White[9] and Stephens et al.[5] report 8 and 5 per cent, respectively, suggesting that close chemical control of the diabetes plays an important role in its prevention. Edema, one of the three signs of toxemia (hypertension, edema, and proteinuria), is commonly seen during the latter half of pregnancy. Its partial or complete prevention depends on early sodium restriction. The development of the other two cardinal signs is generally preceded by a decline in glomerular filtration rate[12] and the appearance of renal failure as indicated by a rising blood urea nitrogen and serum creatinine. Patients who exhibit intracapillary glomerulosclerosis (Kimmelstiel-Wilson syndrome) at the outset of pregnancy may already have the triad of hypertension, edema, and albuminuria so that the appearance of preeclampsia is insidious. These patients' renal function may decline during pregnancy and remain low after delivery, leaving them with a permanent loss of renal function, whereas those patients without advanced renal lesions generally have a return to prepregnancy function after delivery. The appearance of a rapidly progressive renal failure prior to the twenty-eighth week of gestation may be an indication for interruption of the pregnancy. Treatment of toxemia in addition to strict chemical control of the diabetes consists of severe sodium restriction (0.5 gm. per day), diuretics of all types (we have found the thiazides safe and effective), sedation, and antihypertensive drugs such as hydralazine, Rauwolfia, and protoveratrine or a combination of these. Care must be taken that electrolyte depletion does not occur on intense diuretic therapy. If, in spite of these measures, water accumulation persists and hypertension cannot be controlled on an ambulatory basis or if severe nausea and vomiting appear, the patient must be hospitalized for parenteral fluid and electrolyte management, close observation of renal and cardiac status, and total bed rest. If, in spite of conservative medical management, improvement does not occur or if the toxemia progresses, termination of the pregnancy is indicated.

Infection, particularly of the urinary tract, can be a serious complication in the pregnant diabetic patient. Because of persistent glycosuria and dilated ureters from the pregnancy, she is unusually susceptible to both acute and chronic pyelonephritis. The acute condition is easily diagnosed and treated but asymptomatic bacilluria may be a lurking danger. Its presence should be sought by obtaining a sterile midstream voided urine specimen for colony count. The presence of more than 100,000 colonies per cubic centimeter indicates the presence of chronic infection. Each pregnant diabetic patient should have at least one such colony count near the end of the first trimester, and, if positive, a subsequent culture should be done at intervals after treatment has begun to determine its effectiveness. Appropriate antibacterial therapy should be employed if pyelograms demonstrate the absence of an obstructive lesion. If sulfonamides are used, they should be discontinued a week or more before delivery because of the increased susceptibility of the infant to kernicterus. Antimicrobial therapy should be continued throughout pregnancy because if it is not, relapse invariably occurs. Treatment of pyelonephritis, is yet another weapon in our campaign to decrease fetal mortality and maternal morbidity.

Diabetic retinopathy, now one of the most common causes of blindness in this country, may appear for the first time during pregnancy or it may progress rapidly during gestation. Funduscopic examination should be done on all patients at their periodic office visits. Rapid progression of retinal lesions associated with significant impairment of vision is a strong indication for immediate delivery. Usually, retinal lesions subside to a degree after pregnancy and in some instances disappear entirely. Close observation of them during the pregnancy offers the physician one more guidepost to the clinical status of his patient.

OUTCOME

Infants of diabetic mothers have been noted to have six times the incidence of congenital defects that are seen in infants of normal women.[2] At birth they are usually overweight, edematous, and cushingoid in appearance and have organomegaly, particularly of the heart, liver, and spleen. Excretion of 17-ketosteroids and 17-hydroxycorticosteroids is increased over that of normal infants. Hypoglycemia possibly due to hyperinsulinism, formerly thought to account for early disability in these infants, is now known to occur in normal newborns for the first week of life when levels of 20 to 60 mg. (true blood sugar) are recognized as normal. The major problem during the neonatal period relates to the respiratory tree where pulmonary hyaline membrane, with associated atelectasis, hypoxia, and respiratory acidosis, is common. In extremely edematous babies with respiratory difficulty, congestive heart failure may also occur. Jaundice occurs in these infants, but, according to Gellis,[13] is not more common than in premature infants of nondiabetic mothers.

Treatment of the infants of diabetic mothers is basically the same as for premature infants generally. The child is placed in an incubator, and, if respiratory distress develops, oxygen in concentrations of 35 to 40 per cent with a water mist is administered. Oxygen concentrations of greater than 40 per cent should be avoided because of the danger of retrolental fibroplasia. Aspiration of contents of upper respiratory tract and stomach, which often contain excessive amounts of amniotic fluid, should be routine. This, plus slight elevation of the head, will materially aid the muscular effort of the diaphragm in respiration. For this reason, also, oral feeding is omitted for twenty-four to seventy-two hours depending on evidence of respiratory embarrassment. White[10] advocates withholding parenteral fluids to avoid fluid accumulation, while others[4,5] have found no substantial difference in outcome if parenteral fluid, such as 2.5 per cent glucose subcutaneously or 5 per cent glucose intravenously (umbilical vein), is used in amounts of 120 to 200 cc. per twenty-four hours.

If the infant displays respiratory distress, manifested by rates of greater than 60 per minute; cyanosis despite oxygen therapy; retraction of supra- and infrasternal tissues and intercostal spaces; and an expiratory grunt or complaining cry, it usually occurs within the first twelve hours. If it survives the first forty-eight hours in the face of this "hyaline membrane syndrome," prognosis is good even though cyanosis and recurrent episodes of apnea or irregular breathing (characteristic of premature infants) may last as long as four to five days. A chest X-ray film should be made to rule out the possibility of other causes of poor ventilation. The characteristic picture of "hyaline membranes" is that of a fine reticular infiltrate of granular appearance scattered throughout both lung fields. In infants with severe distress, rapid digitalization may promote survival.

Unfortunately, there is no specific "treatment" for hyaline membrane syndrome except prevention. It is much more prevalent in infants delivered before thirty-seven weeks gestation, so, whenever possible and if obstetric indications permit, delivery should be delayed until this time. Until the causes of respiratory morbidity and mortality in the infants of diabetic mothers are better understood, treatment will remain basically that of meticulous care of the diabetic mother.

SUMMARY

It has been our experience and that of most workers in this field that the one most important factor in the successful outcome of a diabetic pregnancy is meticulous control of the diabetes. When this is accomplished, all other complications which may arise, such as acidosis; toxemia; infection; hydramnios; progressive retinopathy; and nephropathy, are far less troublesome. With careful attention to the obstetrical as well as the medical details of management, the fetal salvage rate should be 90 per cent or more.

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ACTIVE ACROMEGALY is readily distinguished from the inactive form with the help of biopsy of the costochondral junction. Active endochondral bone formation in patients more than 30 years old indicates active disease. No histological evidence of endochondral bone formation is found in patients of this age group with inactive acromegaly. Biopsy is performed under local anesthesia. A longitudinal incision is made directly over the sixth or seventh rib, the external intercostal muscles are incised, and the rib is exposed. The periosteum of the rib is infiltrated with anesthetic solution and is incised and reflected. A rectangle of bone and cartilage 2 to 3 cm. in length is cut with a Stryker saw from the outer plate of the rib only. The specimen is removed by undercutting with a small osteotome, avoiding a buckle or break at the junction. A pledget of Gelfoam is placed in the defect, and the periosteum is closed with 1 or 2 sutures. At pathological examination, endochondral bone formation is classified histologically as inactive, slightly active, moderately active, or highly active. Active bone formation is characterized by groups of vesicular cartilage cells at the costochondral junction associated with basophilic zones within adjacent vascularized bony trabeculae. Typical histological patterns were found in biopsy specimens from 28 patients with active and inactive acromegaly. Patients with anterior pituitary failure associated with acromegaly were given 100 mg. of cortisone, or its equivalent, orally one hour before operation and 50 mg. three or four hours later; no instances of adrenocortical failure occurred.

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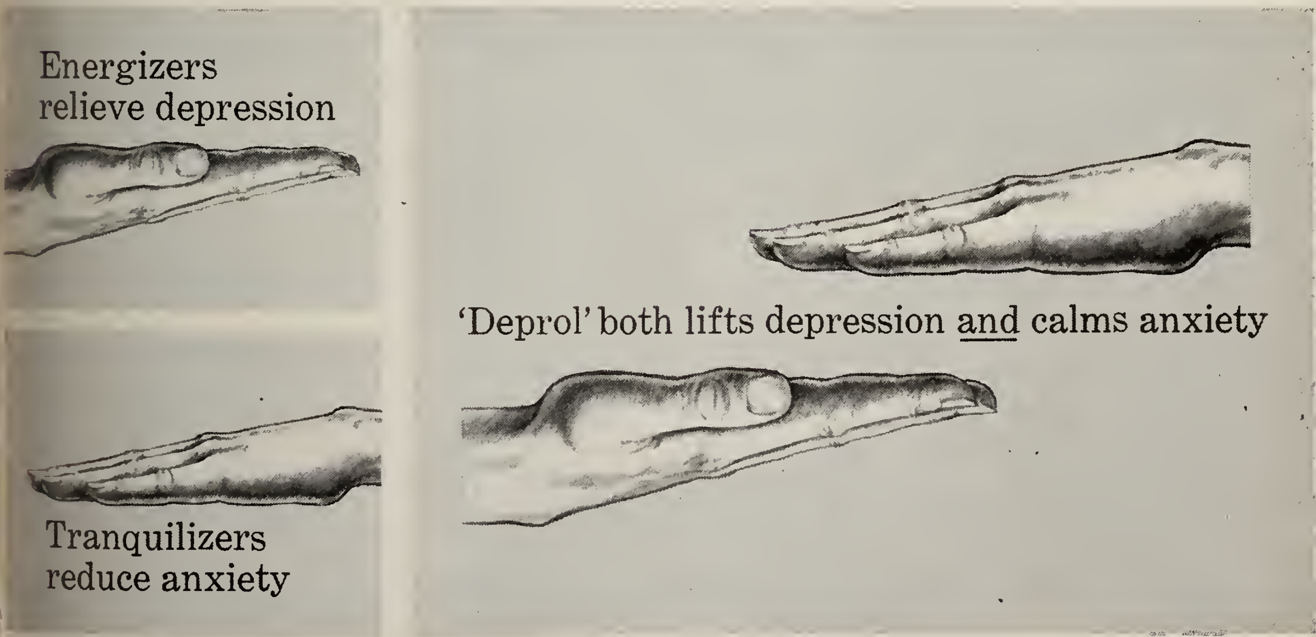

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Book Reviews . . .

Bone Changes in Hematologic Disorders

JOHN E. MOSELEY, M.D., *1963. New York City: Grune & Stratton. 261 pages. Illustrated. $9.50.*

The monograph does accomplish what the author intended, that is, to discuss the bone changes in the well-documented limited number of hematologic diseases. It is actually a reprint of multiple articles previously published in The Journal of the Mount Sinai Hospital.

Well-known roentgenographic manifestations of bone changes in 6 forms of anemia, hemophilia, leukemia, osteopetrosis, multiple myeloma, reticuloendotheliosis, and malignant lymphomas are described, and for the most part, are well illustrated.

Even though no new findings or special techniques are demonstrated, the monograph does serve a purpose in the form of a concise, easily followed text for those needing a reference quickly. The quality of the reprints is very good, which is most important in illustrating specific trabecular, cortical, endosteal, and/or periosteal changes which will help differentiate many of the hematologic diseases.

The pediatric films which are reproduced are often not from the author's personal collection and are frequently inadequate. Repetition of changes formerly described as being characteristic for erythroblastosis fetalis is considered unfortunate by the reviewer, for recent studies have made this section outmoded.

In spite of an apparent lack of enthusiasm for the monograph as a new contribution to the roentgenographic or hematologic literature, the reviewer can honestly consider it worthwhile for one's reference library as a brief summary of roentgenographic findings in a limited number of relatively common hematologic diseases. The book is well planned and well printed. The quality of the prints and paper is excellent.

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Tumors of the Chest

THOMAS J. KINSELLA, M.D., *1963. Springfield, Ill.: Charles C Thomas. 145 pages. Illustrated. $9.50.*

Dr. Kinsella has been a pioneer thoracic surgeon. He is unique in that he also has an excellent background in internal medicine as related to diseases of the chest. The combination of chest physician and chest surgeon is indeed unique. It is for this reason that this monograph on tumors of the chest is most important. The author views these problems both as an internist and a thoracic surgeon. The material in the monograph is the author's own material that he has accumulated since 1936. He has developed this monograph on the basis of the history, the physical examination, the diagnostic procedures and, finally, the approach surgically to the diagnosis and treatment of chest tumors. In an orderly presentation he discusses tumors of the chest wall and of the mediastinum and its divisions, malignant tumors, metastatic tumors, and the like. The monograph is concise and informative. The overall presentation of Dr. Kinsella's experience is adequate. As usual, the Charles C Thomas Company has done an excellent presentation of the material as well as of the illustrations. Some illustrations, unfortunately, through reproduction have lost their details but, generally, they are good. It would have been much better had the presentation of the tumors been in color but it is understandable that this would have been a prohibitive procedure.

The reviewer feels there should be more such monographs concerning the individual physician's experience within the area of his specialty. This monograph is a good example of what one can obtain from a physician and surgeon: discipline within his specialty. The monograph is exceptionally well done; it serves its purpose and is recommended for students and practitioners.

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Radioactive Isotopes in Medicine and Biology

EDITH H. QUIMBY, SC.D., *and* SERGEI FEITELBERG, M.D., *1963. Philadelphia: Lea & Febiger. 343 pages. Illustrated. $8.00.*

This book deals with the background physics and instrumentation necessary to the intelligent use of radioactive materials in medicine and biology. It is a second edition of this book by these authors and is published as Volume One of a two-volume series. Volume Two in this series is devoted to an appraisal of clinical applications of radioisotopes.

The book contains 343 pages of printed material, including the index, with approximately the first half of the book devoted to basic physics and the second half to instrumentation. In general, the section on physics is quite well written. It does contain a number of excellent graphs and figures. Although certain principles of physics considered to be important in the understanding of radioactive isotopes are omitted, the authors do quite well in covering the significant material. The use of calculus without introduction may place this book beyond the scope of many readers. There are a number of errors in the book; among these are: the definition of "activity" (page 36), the slope of the top curve of the graph on page 36, mathematics of radioactivity (page 37), consideration of absorption coefficient (page 85), and mathematical treatment of yield in a nuclear reaction (pages 55 and 56).

The subject matter on instrumentation is well presented in the space available and should serve as an excellent introduction to nuclear instrumentation. The style of writing and the illustrations used are very good. It is believed that additional illustrations could have been used to good advantage.

In summary, it is concluded that this book will serve as an adequate introduction to the physics and instrumentation associated with the use of radioactive isotopes in medicine and biology. As mentioned, there are certain deficiencies which may require the reader's referral to other texts on the physics of radioisotopes.

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News Briefs . . .

North Dakota

DRS. JERALD CONNELLY AND JOHN DUERRE have joined the University of North Dakota School of Medicine faculty. Dr. Connelly is assistant professor of biochemistry and Dr. Duerre is assistant professor of microbiology. Shortly after his arrival at the University, Dr. Duerre received a National Science Foundation grant of $44,000 effective November 1 for a three-year study of the metabolism of S-adenosyl-L-homocysteine. He previously was a research bacteriologist at the United States Public Health Service Rocky Mountain Laboratory, Hamilton, Montana. Dr. Duerre received his Ph.D. degree in microbiology at the University of Minnesota. Dr. Connelly was a postdoctoral fellow at the Enzyme Institute, University of Wisconsin, from 1958 to 1961. He earned a Ph.D. degree in biochemistry in 1958 at the University of Rochester.

° ° ° °

DR. YA PIN LEE has been appointed as a Louis W. and Maud Hill Family Foundation research professor in biochemistry at the University of North Dakota School of Medicine. Dr. Lee has been a faculty member at Washington University, St. Louis, and an assistant professor at the Enzyme Institute of the University of Wisconsin. He is known for his investigation of thyroid function and research in thyroid hormones and enzymes. Dr. Lee has been awarded a National Institute of Health research grant for study of hormone effect on carbohydrate metabolism and on respiration. He received a medical degree from the Medical School of National Taiwan University and a Ph.D. degree from Kyushu University, Japan.

° ° ° °

DR. U. SCHUYLER ANDERSON has become Chief of Surgical Service in the Veterans Administration Center in Fargo. Dr. Anderson has been a consultant in the outpatient department of the Veterans Administration Hospital, Minneapolis, since 1946.

° ° ° °

DR. DELBERT J. HLAVINKA has moved from Elgin, where he was associated with Drs. Adolfs Curiskis and Melvin Jacobson. He will be associated with Dr. Robert E. Hankins in Mott. Dr. Hlavinka went to Elgin after interning at St. Luke's Hospital, Fargo.

° ° ° °

DR. RONALD M. KLOSTER has joined Drs. R. C. Little and James M. Little at the Little Clinic in Mayville. During the past four years, Dr. Kloster has been Director of Medical Services at the K. I. Sawyer Air Force Base in Michigan, where he earned the Air Force Commendation Medal. He received his medical education at the University of North Dakota School of Medicine and the University of Kansas School of Medicine, Kansas City.

° ° ° °

DR. GERALD J. KAVANAUGH has returned to the Mayo Clinic in Rochester, Minnesota, as a member of the staff. He came to Fargo from the Clinic in 1959 to join the Dakota Clinic. Dr. John M. McMahon, who has been an instructor in internal medicine at the State University of Iowa, Iowa City, has become associated with the Dakota Clinic.

DR. DENNIS WOLF, a 1962 graduate of the University of Minnesota Medical School, has been assigned by the United States Public Health Service to the Public Health Service Indian Hospital in Fort Yates. Dr. Wolf completed his internship at St. Mary's Hospital, Duluth.

° ° ° °

DR. CHARLES R. PETTY, with the Craven-Hagen Clinic in Williston since 1961, has moved to western Montana. He was president of the Kotana Medical Society.

° ° ° °

FOUR PHYSICIANS have joined the Quain and Ramstad Clinic at Bismarck. Dr. Helmut Arnold, otolaryngologist, is a member of the eye, ear, nose, and throat department. He is a graduate of the University of Heidelberg and completed a residency at Bismarck Hospital. Dr. William G. Null is with the pediatrics department. Dr. Null was graduated from the Medical College of Alabama, interned at Carraway Methodist Hospital, and completed a residency in pediatrics at University Hospital, all in Birmingham. Dr. Grandon E. Tolstedt joined the surgical department. A graduate of Northwestern University Medical School, Dr. Tolstedt's internship at Doctors Hospital, Seattle, was followed by a residency at Veterans Administration Hospital, Seattle. Dr. Pablo Ramos is a member of the radiology department. He was graduated from the National University of Mexico, interned at St. James Hospital in Butte, Montana, and completed residency in surgery at Bismarck Hospital and residency in radiology at Bismarck and St. Alexius hospitals.

° ° ° °

DR. RALPH E. TARNASKY, former director of anatomical pathology at Macon Hospital, Georgia, has become director of laboratories in the department of pathology, St. Alexius Hospital, Bismarck. After completion of specialty training in anatomical and clinical pathology at the Bowman Gray School of Medicine and North Carolina Baptist Hospital, Winston-Salem, North Carolina, Dr. Tarnasky was associated with Dr. John D. Le Mar at the Fargo Clinic and St. Luke's Hospital in Fargo.

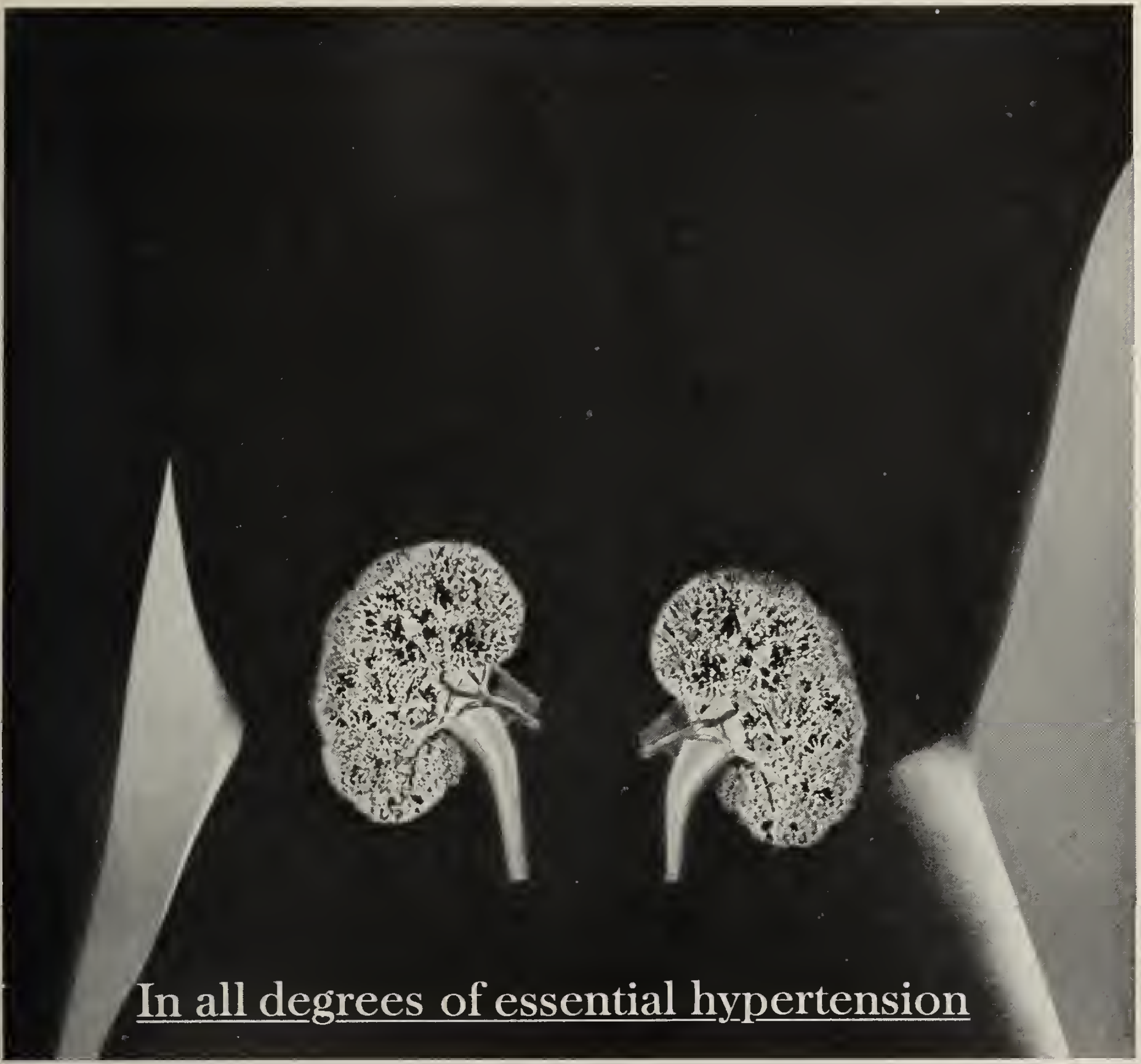
Minnesota

DR. EDWARD C. CLARK, Rochester, a Mayo Clinic consultant in neurology since April 1952 and an instructor in neurology at Mayo Foundation Graduate School, University of Minnesota, has taken early retirement from the clinic for health reasons. Dr. Clark, 45, a native of Fresno, California, is making his home in San Diego.

° ° ° °

DR. MAX SEHAM, 75, has retired after practicing for fifty-four years, mostly in Minneapolis. After receiving his medical degree from the University of Minnesota in 1910 he interned and worked in hospitals in Minneapolis, Boston, New York, and Montreal. He was a first lieutenant in the Army Medical Corps in World War I. A former chief of staff at both Mount Sinai and Abbott hospitals, he also was a director of the General Hospital children's heart clinic and Lymanhurst Heart Clinic. He

(Continued on page 22A)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References: (1) Moyer, J. H., and Heider, C.: Am. J. Cardiol. 9:920 (June) 1962. (2) Brest, A. N., and Moyer, J. H.: Pennsylvania M. J. *63*:545 (Apr.) 1960. (3) Berry, R. L., and Bray, H. P.: J. Am. Geriatrics Soc. *10*:516 (June) 1962. (4) Hutchison, J. C.: Current Therap. Res. *4*:610 (Dec.) 1962. (5) Feldman, L. H.: North Carolina M. J.: *23*:248 (June) 1962.

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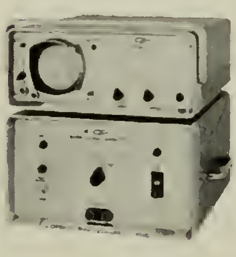

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NEWS BRIEFS

(Continued from page 20A)

served in Minneapolis as a general practitioner and one of the area's first pediatricians.

° ° ° °

DR. JAMES Y. NAKAMURA, in practice at Deer River for twelve years, has joined Dr. Henry A. Korda in the Korda Clinic, Pelican Rapids.

° ° ° °

DR. WILLIAM H. INGLIS has left Cairns Clinic, Redwood Falls, to become a resident in ophthalmology at Milwaukee, Wisconsin, County Hospital. Dr. Inglis has been associated with Cairns Clinic since 1950. He will be replaced on the clinic staff by Dr. William B. Eilers, a former Redwood Falls resident who has been in military service.

° ° ° °

DR. GARY GLOMSTAD, who received his medical degree from the University of Minnesota and interned at Bethesda Hospital in St. Paul, has started practice in Deer River with Dr. Albert Roth. Dr. Glomstad is the son of Mr. and Mrs. Henry Glomstad of Montevideo, Minnesota.

° ° ° °

DR. WARREN L. KLEINSASSER, St. Paul, has joined the practice of Drs. Anthony Field, Murray Hunter and Jurgen Moller in Farmington as a general practitioner. He received his medical degree from the University of Minnesota in 1962 and interned at Bethesda Hospital, St. Paul.

° ° ° °

DR. D. R. NAVRATIL, Glencoe surgeon, has taken a one-year leave from his practice to complete the remaining year of a four-year residency in surgery required by the American Board of Surgery. Dr. Navratil has accepted a one-year appointment as chief resident in general surgery at Columbia Hospital, Milwaukee, Wisconsin.

° ° ° °

DR. DONALD PETERSEN, in practice at Northfield for fifteen years, has accepted a staff position at Willmar State Hospital. He replaces Dr. Hugo Brenner, who accepted a surgical residency in Florida.

° ° ° °

DR. VINCENT RYDING has closed his practice in Mountain Lake to accept a position on the staff of the Hospital Health Service at the University of Iowa, Ames.

° ° ° °

THE UNIVERSITY OF MINNESOTA Post Graduate Program for 1963, to be held at the Center for Continuation Study, Minneapolis, on September 30 and October 1 and 2, will be on "Failure to Thrive." Guest professors will be Dr. Robert Aldrich, director of the National Institute of Child Health and Professor of Pediatrics, University of Washington; Dr. Albert Dorfman, University of Chicago; and Dr. Norman Kretchmer, Stanford University. Sections will be devoted to intestinal, connective tissue, renal, and endocrinological causes of failure to thrive. Reservations are available from Dr. W. Albert Sullivan, director of Continuation Medical Education, Box 282, University of Minnesota Hospitals, Minneapolis 14, Minnesota.

° ° ° °

THE MINNESOTA MEDICAL FOUNDATION has awarded $9,000 in research grants and stipends to five faculty members and four medical students of the University of

(Continued on page 24A)

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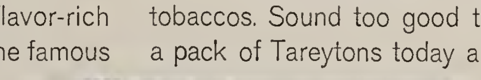

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NEWS BRIEFS

(Continued from page 22A)

Minnesota Medical School. The awards, offered for work in heart disease and cancer, are endowed permanently by a bequest from the late Arvid Olson of New Town, N. D. Begun in 1962, the program has awarded $16,750 to sixteen researchers.

Recipients for 1963 are:

Faculty: Dr. Jack H. Bloch, department of surgery, "Hemodynamic Effects of Drugs on Coronary Shock in the Closed Chest Dog," $1,500; Dr. Paul E. Strandjord, department of laboratory medicine, "Studies of the Inhibition of the Glycolysis of Malignant Cells by Lactate Dehydrogenase Inhibitors," $1,500; Dr. Lorraine M. Gonyea, department of laboratory medicine, "Activation Studies of Prothrombin," $1,000; Dr. Theodore B. Grage, department of surgery, "The Relation of Volume Sensitive Receptors in the Left Atrium to Diuresis and Antidiuresis," $900; Dr. H. David Root, Ancker Hospital, St. Paul, "Experimental Revascularization of the Ischemic Limb," $1,500.

Medical students: Richard T. Olson, Tower, "Development of a Practical Clinical Laboratory Method for Determining Serum Ornithine Carbamoyal Transferase," $500; William M. Hagen, St. Paul, "Continuance of Studies of Myocardial Infarction and Pulminary Embolism," $300; Avrin M. Overbach, St. Louis Park, "The Regulation and Production of Aldosterone in Heart Disease," $900; Bernard E. Statland, St. Paul, "Biochemical Analysis of the Relaxing Factor System in Heart Muscle," $900.

° ° ° °

DR. RICHARD W. SWENSON, JR., an internist, has joined the North Clinic in Minneapolis. He previously was associated with the Mesaba Clinic, Hibbing. He was graduated from the University of Minnesota Medical School.

° ° ° °

DR. JERRY GREEN of the Mayo Clinic, Rochester, has joined Dr. R. Popoff at the Oliver Clinic, Graceville, as a temporary replacement for Dr. Harvey Bergner, who has gone to Winnipeg for study in internal medicine. Dr. Green, who is a graduate of the University of Manitoba Faculty of Medicine, Winnipeg, is on a leave of absence until Dr. Popoff obtains a permanent associate.

° ° ° °

DR. HOMER H. RUSS has announced that he will move from Le Center to Lindstrom. Dr. Russ is a 1959 graduate of the University of Minnesota Medical School. He went to Le Center in 1960 after completing his internship.

° ° ° °

DR. D. A. BERGERON of Le Sueur has been awarded a Fellowship in Internal Medicine at the University of Minnesota Hospitals. He will rejoin the Minnesota Valley Medical Associates in Le Sueur after completing his studies at the University and at Mount Sinai Hospital in Minneapolis. Dr. A. D. Walden, formerly with the United States Navy, will join the Medical Associates in August or early September after his discharge from the service.

° ° ° °

DR. JAMES FETT of Campbell has been commissioned a medical missionary by the American Baptist Foreign Mission Society. He and his family will spend several months in Belgium, where he will study language and tropical medicine before leaving for the Congo. Dr. Fett received his medical degree and a master's degree in public health at the University of Minnesota.

DR. WILLIAM H. BICKEL, head of a section of orthopedic surgery at the Mayo Clinic, Rochester, has received an Alumni Distinguished Service Award from Lawrence College, Appleton, Wisconsin. Dr. Bickel is president-elect of the American Academy of Orthopaedic Surgeons, Inc.

* * * *

DR. ORMOND S. CULP, head of the Section of Urology at the Mayo Clinic, Rochester, has been awarded an honorary degree of doctor of science by Ohio Wesleyan University, Delaware, Ohio.

South Dakota

DR. V. A. ZANDERSONS has begun practice in Parker. Dr. Zandersons is a native of Dobele, Latvia, and received medical training at the University of Latvia. He interned at the Sioux Valley Hospital, Sioux Falls, after coming to the United States in 1950. He practiced medicine at Herreid for nine years and then, with his family, lived a short time at Sioux Falls and Woonsocket.

* * * *

DR. LLOYD C. VOGELGESANG has become associated with Dr. D. R. Studenberg in practice of medicine and surgery at Gregory. Dr. Vogelgesang was enrolled in a postgraduate course in anesthesiology at Fairfield, Alabama, before moving to Gregory.

* * * *

THE EAGLE BUTTE Public Health Service Indian Hospital has announced several changes in staff personnel. Dr. Theodore Thoburn has been named Medical Officer in Charge to succeed Dr. Leonard Linde, who is leaving the Public Health Service to enter private practice at Mobridge. Dr. Thoburn has been Field Health Physician for the past two years. Dr. R. Linsy Farris has left for Wagner to become Medical Officer in Charge of the Public Health Service hospital there. Dr. Raymond Des Rosiers has resigned from the Public Health Service to begin private practice in Sturgis.

Deaths . . .

DR. ROSCOE R. FISK, 76, physician in Flandreau, South Dakota, for forty-four years, died in Dell Rapids on June 29 after a long illness. Dr. Fisk practiced medicine in Brookings during 1913-17 and went to Flandreau in 1919. He was graduated from the University of Illinois College of Medicine in 1912.

* * * *

DR. LEONARD G. FLANAGAN, 59, eye, ear, nose, and throat specialist in Austin, Minnesota, since 1937, died July 5 in St. Joseph Hospital, St. Paul. A native of Wykoff, Minnesota, he was graduated from the University of Minnesota Medical School in 1929.

* * * *

DR. GARNETT B. BELOTE, 75, former Caledonia, Minnesota, physician and surgeon, died June 29 in Pleasant Hill, California, after a long illness. A native of Grones County, Kentucky, he moved to Caledonia in 1914 and returned there after service in World War I. He took

(Continued on page 26A)

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DEATHS

(Continued from page 25A)

over the practice of the late Dr. William E. Browning. Dr. Belote retired in 1943 and moved to California in 1961.

° ° ° °

DR. JOHN T. LITCHFIELD, 81, who was honored in 1957 by the Minnesota State Medical Association for fifty years of medical practice, died July 14 in Minneapolis. During his practice, he was a staff member of St. Mary's, Eitel, and Abbott hospitals. In 1942, he was chief of staff at St. Mary's, where he had been associated from the hospital's beginning in 1920. Dr. Litchfield was a fellow of the American Academy of Ophthalmology and Otolaryngology for forty-four years. He was graduated from the University of Minnesota Medical School in 1906.

° ° ° °

DR. W. C. NICHOLS, 81, who practiced in Fargo, North Dakota from 1910 until his retirement in 1954, died in Anaheim, California, on July 12. Dr. Nichols was graduated from Rush Medical College, Chicago, in 1908. In 1921, after practicing in Fargo for eleven years, he joined the staff of the Fargo Clinic. He was active in the Episcopal Church and a member of Delta Tau Delta fraternity. Dr. Nichols moved to California in 1954.

° ° ° °

DR. DONALD CHURCH BALFOUR, 80, director emeritus of the Mayo Foundation for Medical Education and Research of the University of Minnesota Graduate School, died July 25 at St. Mary's Hospital, Rochester, Minnesota. A staff member of the Mayo Clinic from 1909 to 1947, Dr. Balfour also was emeritus professor of surgery in the Mayo Foundation. He was a member of the board of governors of the Mayo Clinic from 1929 to 1947 and chairman from 1933 to 1936. He was Mayo Foundation director between 1937 and 1947.

Dr. Balfour was probably best known for his work on diseases and surgery of the stomach and duodenum. With Dr. G. B. Eusterman he published a major book, "The Stomach and Duodenum," in 1935. He contributed more than 225 writings to the medical and surgical literature and was on the editorial boards of both "Surgery" and "Surgery, Gynecology and Obstetrics."

In addition to membership in local, state, and national medical societies, Dr. Balfour was a member of the executive committee of the Advisory Board of Medical Specialties; a founder-charter member of the American Board of Surgery, Inc.; president, regent, member of the advisory council, and member of the committee on graduate training in surgery of the American College of Surgeons; and chairman of the section on surgery of the American Medical Association, among other posts.

The Builder of the Name Award was conferred upon him by the University of Minnesota in 1950. Other major honors included the Distinguished Service Award of the American Medical Association in 1955, the Friedenwald Medal of the American Gastroenterological Association in 1956, the cross of Knight Commander of the Royal Order of the Crown of Italy, and the insigne of commander in the Order of Merit of the Republic of Chile. The Donald Church Balfour Visting Professorship was established by the Mayo Foundation in 1960 to honor Dr. Balfour.

Dr. Balfour's wife, the former Carrie L. Mayo, daughter of Dr. and Mrs. William J. Mayo, died in 1960. They had 4 children.

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Series on UROLOGY *for the* PRACTITIONER

The Investigation of Hematuria

JAMES OLIVER, M.D.
Minneapolis

THE PRESENCE of blood in the urine, whether microscopic or gross, is always considered abnormal and may be of great importance. The causes of hematuria are numerous and many are of grave significance. To differentiate the serious from the relatively benign, a complete urologic investigation is mandatory. It has been wisely said that hematuria must always be considered serious until proved otherwise. This statement should be heeded by all physicians, since it dictates the need for thorough investigation regardless of the type, amount, symptomatology, or duration of the hematuria.

It may be instructive to review the more frequent causes of hematuria, to relate some of the experiences of others and ourselves, and to outline an acceptable method of investigation.

CAUSES

While we know that many factors such as calculi, infections, tumors, trauma, and systemic diseases can be responsible for hematuria, we should still be constantly on the alert for the patient who may be bleeding while receiving therapy with anticoagulants. It must not be assumed that his hematuria is related solely to this medication, just as it cannot be assumed that his hematuria is caused solely by infection.[1] By so doing, the physician could quite easily miss a coexisting tumor or other significant pathology.

It is interesting to note the origin of hematuria in about 2,400 cases cited by Creevy.[2] In 760 cases, bleeding was due to neoplasm; in 500, to inflammation; in 425, to calculi; in 275, to tuberculosis; and in 400, to systemic and indeterminate causes. In 1956, Green and associates[3] reported a series of 500 patients with asymptomatic microscopic hematuria, 56 per cent of whom had urologic lesions. On the basis of this study, they found that "a lesion varying in significance from great to moderate was detected in about 10 per cent of patients: The lesion was neoplastic in about 2 per cent of patients." They concluded that it appeared advisable to perform a complete urologic investigation in all cases of asymptomatic microscopic hematuria.

In our experience at the Minneapolis Veterans Administration Hospital during the period from August 1961 to February 1962, 38 patients with either gross or microscopic hematuria were admitted to the Urology Service. This number does not include patients transferred from other services in the hospital for investigation, those with known malignancies of the urinary tract, those with a history of a recent urologic procedure, or those admitted with an indwelling catheter. In 14 of the 38 patients, hematuria was associated with benign prostatic hypertrophy; in 13, bleeding was due to calculi; in 6, to tumors;

JAMES OLIVER *is with the Urology Section, Surgery Service, Veterans Administration Hospital, Minneapolis.*

in 2, to carcinoma of the prostate; and in 2, was thought to be related to obstruction of the ureteropelvic juncture. There was one instance of renal hematuria of undetermined etiology. It is apparent in even this small series that hematuria is capable of etiologic variability as well as relativity in its significance.

METHOD OF INVESTIGATION

With the knowledge that it is wise to investigate fully all cases of hematuria, let us discuss an acceptable method of investigation which includes the following steps: history, physical examination, laboratory data, excretory urography, cystoscopy and, possibly, retrograde pyelography, and special studies when indicated.

Since the history is of great importance, inquiry should be carefully conducted and reported and should include complete details of familial, past, and present facts. History of allergies, drug sensitivities, bleeding tendency, current medications, calculi, surgery, trauma, and previous instrumentation should be noted carefully. Sometimes a clue may be obtained by determining whether the hematuria is initial, terminal, or total and whether it is painful or produces no distress. At times, what one may assume to be hematuria may, on closer questioning, be urethral bleeding not associated with voiding. Additional important information can be gained by inquiring as to the patient's voiding habits, diminution in size and force of the stream, hesitancy, and other symptoms of prostatic disease.

The physical examination, of course, should be thorough and should include all systems rather than the genitourinary tract alone. In the urologic evaluation, the abdominal examination includes flank examination for evidence of tenderness, masses, and rigidity. During the examination of the external genitalia, it is advisable to palpate the urethra and to inspect the urethral meatus in both male and female patients. Testes are usually best felt between the fingers of both of the examining hands. Rectal examination should include careful inspection of the rectum and the anal area, palpation of the external anal sphincter and perineum, and, in the male, palpation of the prostate for size, shape, tenderness, nodules, and fixation. Light massage of the prostate to obtain secretions for microscopic examination may be done at this time. It is our feeling that secretions are obtained more easily after the patient has voided but before the residual urine has been measured. In the female with hematuria, it is imperative that a thorough gynecologic examination be performed. To be considered reliable, all urine specimens from the female, whether for purposes of microscopic, gross, or bacteriologic evaluation, must be obtained by catheterization.

Laboratory data are obtained easily and consist of urinalysis; urine culture for common organisms and testing of their sensitivity to antibiotics, and culture for acid-fast bacilli; complete blood count; blood urea nitrogen; prothrombin time; serum bilirubin; serum acid phosphatase; and x-ray films of the chest. Microscopic study of material from a 2-glass test of the urine may be very useful but is of most value when performed on fresh specimens. A skin test for tuberculosis is an important addition to these procedures.

It is fortunate that excretory urography is readily available, since it is a procedure which yields valuable information. Following adequate preparation of the intestinal tract, with milk of magnesia, and fluid restriction beginning the evening before the study, we usually employ 30 cc. of 50 per cent diatrizoate (Hypaque) intravenously after a preliminary test has been done to check for possible sensitivity. Good renal outlines and upper tracts completely filled with contrast medium are essential for accurate interpretation of the urogram. The physician should hesitate to consider inadequately visualized structures as normal. If the ureters do not fill in their entirety, or if some of the calyceal systems are hazy, it cannot be assumed that the urogram is normal or "good enough."

With hematuria, special care must be exercised and close attention devoted to details in order to avoid missing small but possibly significant lesions. If dissatisfied with the excretory urograms, one can either repeat the series or resort to retrograde pyelography at the time of cystoscopy. When we are unable to obtain good renal outlines in our excretory or retrograde studies and suspect an abnormality, we frequently employ 90 per cent diatrizoate intravenously, in selected cases, to obtain a nephrogram effect.

Cystoscopy and, when indicated, retrograde pyelography, will settle many problems, since a fair share of lesions producing hematuria arise in the lower urinary tract. Cystoscopy is indicated in all patients with hematuria, regardless of the type. It is true that during an episode of hematuria associated with an acute infectious process, cystoscopy often should be delayed until the infection and its side effects have subsided. However, when a patient presents himself with gross hematuria, cystoscopy at this time offers the tremendous advantage that it may be possible to visualize the bleeding point. Furthermore, if no lower urinary tract disease or bleeding point can be seen but there is, instead, a bloody efflux from a ureteral orifice, one has learned much.

On occasion, no etiologic factor for the patient's hematuria can be found. This does not imply that the patient can be dismissed but, rather, that close follow-up examinations are necessary.

Further urologic investigations such as nephrotomography and aortography may be indicated, particularly in the evaluation of space-occupying lesions of the kidney. Some of these procedures are quite complicated and are best left to persons especially trained in these fields.

SUMMARY

Hematuria is a fairly common finding which may also be significant. A complete urologic investigation is necessary if serious errors in diagnosis and treatment are to be avoided. A plan of investigation has been outlined which can be utilized easily by the general practitioner, in part if not wholly. It is our responsibility as physicians to try earnestly to determine the cause of hematuria in each case. No other course is acceptable.

By following to completion the steps outlined for the investigation of hematuria, the physician should find the cause of hematuria in most cases with a minimum of cost and inconvenience to the patient. The physician usually is able to inform the patient that his hematuria is due to a relatively benign cause or to a more serious cause requiring definitive treatment.

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ACTH AMELIORATION of the nephrotic syndrome is probably due to stimulation of adrenocorticosteroid secretion, which helps maintain the structural integrity of cytoplasm and cell wall. That serum beta-glycoproteins are conserved suggests a relationship with the anti-inflammatory and antiallergic action of ACTH.

Serum taken from rabbits sensitized to dog or rat kidneys and injected into the sensitizing animals induces a renal syndrome similar to the nephrotic phase of chronic glomerulonephritis in man: endothelium proliferates in the glomerular tuft of capillaries; basement membrane thickens; and adhesions are formed between tufts and capsule. Beta-glycoproteins gradually disappear from the blood and appear in the urine, while plasma beta-lipoproteins increase within hours after injection. Proteinuria and hypoproteinemia reach a peak about six or seven days later.

In untreated animals proteinuria is still demonstrable as long as thirty-seven days after induction of nephrosis when both serum and urinary proteins have returned to control values in animals given ACTH. Electron and light microscopic examination of renal tissue shows that glomerular damage is reduced both in extent and severity by ACTH. The antilipemic effects of heparin and the anticholesteremic action of nicotinic acid do not change the manifestations of nephrosis or increase the effectiveness of ACTH.

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Considerations of Urinary Tract Infection

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THE BASIC PROBLEM in management of urinary infections is to distinguish simple infections in normal urinary tracts from complicated infections in abnormal tracts. Organisms enter the urinary tract by several routes and can cause transient symptoms such as many people experience during a lifetime. In a normal tract under any regime, and often without medical assistance, acute symptomatology even with severe inflammation usually clears within two weeks. By supportive measures and antimicrobial agents, physicians help patients become comfortable more quickly and the course of the disease is shorter.

In contrast, refractory or recurrent infections have a high incidence of underlying urinary tract abnormality. These complicated infections respond poorly to most treatments and are prone to become chronic with irreversible structural and functional damage unless the disorder is corrected. These experiences are confirmed by animal experiments.

SYMPTOMS

The earliest symptoms of infection are frequency and urgency of urination. The latter sensation results from reflex impulses to the tail muscle group (coccygeus, levator ani, and others) which contract with severe irritation and cause a precipitous, minute loss of urine. A burning sensation is caused by irritation of pain endings in the urethra but, as with frequency and urgency, it can be produced by infections originating in the kidney or bladder as well as from lower tract pathology.

The character of pain associated with urethral symptoms is often helpful in localizing the predominant source of inflammation. For example, the "spasm" at the end of or after urination suggests a trigonitis or posterior urethritis. Low backache and perineal discomfort suggest prostatitis or a congested prostate due to distention of the capsule. Clinically these symptoms often are aggravated by increased prostatic secretions from alcohol intake, spicy foods, or sexual excitement. The backache from prostate trouble noted on awakening is eased frequently after walking or voiding, when tension on the capsule is partially relieved. This is in contrast to certain back conditions in which similar symptoms tend to be worse late in the day when patients are tired. In women, vague suprapubic discomfort or bearing-down perineal uneasiness resulting from referred mucosal irritation is typical of acute cystitis and may be the only symptom noted. Ureteral colic due to infection alone is rarely diagnosed. The flank pain of acute pyelonephritis is caused by stretching of the capsule by edema; it is always present but often masked by more distressing symptoms of chills, fever, nausea, and vomiting.

Hematuria is very common because the abundant submucosal vascularity of the urinary tract is easily injured by infection. Patients commonly note even minute quantities of blood because they are voiding frequently in small amounts. Gross or microscopic hematuria is not only a symptom of infection but in addition may be the only sign of underlying pathology such as a tumor or a large calculus in a kidney.

PHYSICAL SIGNS

It is always difficult to prove that urosepsis is limited to the bladder and not the kidney, or to the kidney and not the bladder. Physical findings are another means to identify the predominant location. Tenderness along the urethra pre-

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cedes a urethral discharge. Midline bladder tenderness on pelvic examination suggests cystitis instead of pelvic inflammatory disease. With acute prostatitis, the gland is so extremely swollen and tender that palpation is nearly impossible and even younger individuals have some difficulty voiding because of compression of the urethra. With subacute or chronic prostatitis, rectal examination is more easily accomplished and gland changes are less pronounced. With a congested prostate the gland is enlarged but with massage it is decompressed readily, yielding copious secretions.

A positive psoas sign (hyperextending the hip or raising the leg against resistance eliciting pain distinctly different from that of the opposite side) is diagnostic once in a while of a periureteral or retroperitoneal abscess. Examination for an infected kidney by palpation of the costovertebral angle is like examination for acute abdominal distress. There is point tenderness, local muscle spasm, and a positive Murphy's sign. Murphy's sign (percussion tenderness by jarring the kidney) is comparable to testing for rebound tenderness of peritoneal irritation. If one finds maximal point tenderness by putting the thumb or heel of the hand directly into the half dollar–size location of the costovertebral angle, it is most helpful in differentiating an acute renal infection from several other conditions such as an acute back pain, cholecystitis, pneumonia, diverticulitis, or herpes zoster. An obstructed kidney without inflammation yields a positive Murphy's sign with a certain discomfort, not sharp pain, and there is no point tenderness or local muscle spasm.

LABORATORY EXAMINATIONS

Obtaining a reliable specimen for every urinalysis saves time, effort, and money. Also, symptomatology is evaluated best if voiding can be observed. In the first or third glass of an uninterrupted voiding, tiny comma shreds from inflamed prostatic ducts indicate posterior urethritis. Larger mucoid shreds in the first glass mean an anterior urethritis and often a stricture. The midstream collection, or second glass, both in the male and female, eliminates urethral or vaginal contamination and is as satisfactory as a catheterized specimen for examination or culture.

In a midstream specimen, by Addis count criteria, more than 4 to 6 white blood cells per high-power field or any clumps of white blood cells in 15 cc. of centrifuged urine are diagnostic of inflammation. Bacteria seen on a wet or stained smear from a freshly spun sediment indicate a count of greater than 100,000 colonies per cubic centimeter, which is a clinically significant infection. Since most nonspecific pathogens in urinary tract infections are gram-positive cocci or gram-negative bacilli, there is no advantage of the Gram stain technique over the methylene blue method for office practice. A quick technique is to dry a drop of urine sediment on a slide within a small circle made with a wax marking pencil and stain it one minute with a drop of methylene blue dye. Under oil immersion, one can focus immediately on the colored crayon and then with a half turn downward of the fine adjustment of the microscope, reach the right plane for observing bacteria. One precaution is to make sure that the slide is cooled; otherwise dye may be precipitated and confused with bacteria. If many white blood cells are noted without organisms, tuberculosis must be considered. If bacteria are obviously out of proportion to the cells, then diabetes, residual urine, or delay in examining the specimen are possibilities.

Urine for cultures should be collected midstream and respected like blood cultures. They should be accepted in the laboratory only if still warm from body heat, unless they have been immediately refrigerated, because bacterial numbers square every fifteen minutes and contaminants produce false-positive reports. For most cases, a growth on urine culture is not significant unless there is pyuria or bacteria on smear of the original specimen. It is never wise to institute treatment on the basis of a culture diagnosis alone.

In refractory infections, urine cultures with sensitivities are more important. Disk testing for bacterial sensitivity to nitrofurantoin, sulfonamides, and methenamine mandelate is of little value, and for bacterial sensitivity to other drugs serial tube dilutions are more meaningful.

The usual flora of simple urinary infections are the coliforms, the Staphylococci, and the Streptococci. In complicated infections or with indwelling catheters, Proteus, Aerobacter, and Pseudomonas species are more common. Pathogenic fungus infections are rare except in debilitated or diabetic patients. In this country, parasitic infestations are limited mainly to trichomoniasis. Currently viruses are not known to play a large role in urinary infections. Clinically nonspecific urethritis and some trigonitis are suspected to be of viral origin. These produce annoying symptoms for two to three weeks, have a great tendency to recur, cause much "worriation," but seem to do little damage organically. Local allergic reactions are practically unknown except with prolonged treatments.

OTHER DIAGNOSTIC CONSIDERATIONS

The only symptoms of urinary infection in children may be abdominal pain, nausea and vomiting, or fever. Failure of growth and development does not happen in children until advanced renal failure occurs.

Upper tract infections may cause chills, fever, nausea, or vomiting. Bladder infections rarely produce such systemic symptoms even though a large mucosal area is severely inflamed with edema, exudate, and hemorrhage. The reason may be that most of the bladder lymphatics lie in the muscle layer while only a few lie in the submucosa.

The possibility that bacteremia occurs only through lymphatic channels may be considered in many infections of the genitourinary tract. Acute prostatitis with increased pressure in the tight capsule frequently causes chills and fever while chronic inflammations rarely do unless the gland is massaged or coitus undertaken before drainage is established through the ducts. Similarly, systemic symptoms rarely accompany even severe urethritis unless the infected lymphatics are manipulated by instrumental procedures.

TREATMENT

Supportive treatment of generous fluid intake eases the discomfort of voiding and dilutes the bacterial flora. Forcing fluids may not be entirely beneficial, for antibacterial substances such as urea are also diluted. Inducing a pH urine change by diet or drugs may be additive to specific drug therapy and should be considered in refractory cases. This regimen requires considerable effort and probably is not as effective in the renal parenchyma as it is in the urine itself. Local heat and positioning for improved lymphatic drainage make patients more comfortable.

ANTIMICROBIAL TREATMENT

Drug doses are recommended for treatment at tissue levels rather than to sterilize the urine. This is advised even though most antibacterial agents are excreted by the kidney and can be concentrated in the urine. In oliguria, these drugs are not excreted rapidly and toxic blood levels may be reached. Uncomplicated infections should be treated for at least one week. If symptoms are relieved but pyuria persists, a milder type of drug may be used for a second week of therapy. If there is failure of response to treatment within the first forty-eight to seventy-two hours, a new drug, preferably chosen by sensitivity tests, is indicated.

The sulfonamide compounds are bacteriostatic and are excellent initial medication for most urinary infections because of their specificity, tolerance, and low cost. Those types which yield higher blood levels longer are more effective, yet they also have a higher incidence of reactions. Those that are extremely soluble and rapidly excreted have minimal side effects but function more like a urinary antiseptic. Sulfisoxazole (Gantrisin), 4 gm. a day in adults, is a very satisfactory agent. Nitrofurantoin compounds which are tolerated well but are more expensive tend to be excreted rapidly and act more as a drug in the urine than at the tissue level. For milder infections, a bacteriostatic agent such as methenamine mandelate (Mandelamine) is useful, but it is active only in an acid urine. Urine acidifiers are methionine, ammonium chloride, or cranberry juice. It is hard to prove that azo dyes and antispasmotics directly alter the course of an infection.

Broad spectrum antibiotics are used more often for infections that do not respond promptly. Chloramphenicol, tetracycline, streptomycin, and colistin are reported effective against coliform organisms in certain circumstances. The combination of chloramphenicol and streptomycin or tetracycline and streptomycin may inhibit otherwise resistant strains. Streptomycin, tetracycline, chloramphenicol, and colistin are the most valuable against the Aerobacter organisms. Proteus strains are quite resistant, but some may be inhibited by kanamycin, neomycin, streptomycin, or a combination of penicillin and chloramphenicol. Colistin is the drug of choice at present for Pseudomonas infections. Penicillin and streptomycin, bactericidal agents, are often synergistic against resistant streptococcal as well as some coliform infections. Staphcillin or a combination of chloramphenicol and tetracycline are the best preparations against resistant staphylococcal species. Streptomycin should be used only for short periods because organisms quickly develop resistance to it. Several of these drugs are potentially nephrotoxic, but usually this is not noted unless there is advanced renal disease.

FOLLOW-UP

The most important part in the management of urinary tract infection is proper follow-up care to detect which are simple and which are complicated infections secondary to abnormalities. With a normal tract, acute symptoms usually decrease within forty-eight to seventy-two hours; by a week, urine cultures show no growth; and by fourteen days, the urinary sediment is microscopically clear. In every case before discharging a patient, the urine should be reexamined four to six weeks after all medication has been stopped to make sure that it is still normal by sediment and smear or culture.

The first indication to examine the whole urinary tract is failure of an infection to respond within two weeks despite second drug therapy.

The second indication is pyuria found on microscopic examination four to six weeks after treatment ends, even though there are no symptoms and smears or cultures are negative.

The third indication is gross or microscopic hematuria. Hematuria should always be investigated for, like asymptomatic pyuria, it may be the only clue to a serious underlying problem such as a kidney stone, a malignant tumor, or renal tuberculosis. Never disregard hematuria because of the fact that in more than 90 per cent of patients the hematuria is a simple complication of the infection alone. The individual patient cannot be diagnosed by statistics.

The fourth indication for a full study is recurrence of infection within a year even though there was follow-up evidence that the first infection had cleared entirely. Today, with available antibacterial agents, it is easy to treat successive infections with different combinations of drugs and never seek an underlying disorder.

Finally, in children, many feel that one infection alone is sufficient indication for a full investigation because of the greater opportunity for preventing irreparable damage.

A complete study means evaluation of the upper, middle, and lower tracts with an intravenous urogram, cystoscopy, and often a voiding cystogram for reflux. Depending upon findings, a urologist may need to do supplemental procedures such as retrograde studies, aortograms, cineradiography, pressure dynamics, radioactive renograms, or differential renal tests. There should be no hesitation in recommending a complete urological work-up even in the smallest of infants.

IMPROVEMENT OF HOST RESISTANCE

Some people are prone to have recurring infections even though a complete study has shown no evident pathology. Other conditions extrinsic to the urinary tract may be etiological factors in these recurrences. It may not be readily apparent that emotional stress, overwork, debility of age, and other infections are contributing causes. Reassurance, change of pace, and attention to the individual's total circumstances often have a valuable therapeutic effect.

THE ROLE OF THE UROLOGIST

The urologist's contribution to the treatment of infection is to help in locating obstruction and relieving it. The more nearly the system is returned to normal structure and function, the better it clears itself of infection.

Some obstructive pathology is handled easily in an office, such as opening a meatal stenosis in infants when discharge recurrently seals the orifice, dilating a stricture to clear up recurrent urethral discharge, or massaging a prostate to coax better drainage through the ducts.

Some require major surgery such as correction of a congenital abnormality, extraction of a stone, repair of a cystocele, or removal of prostatic enlargement. Since many genitourinary surgical cases are obstructed and potentially infected, operative incisions are designed to permit external drainage of the retroperitoneal space and to prevent continuing contamination into peritoneal or chest cavities.

A new and challenging group of problems are those dysfunctions that are not obvious but are being recognized increasingly with the development of more accurate diagnostic methods. An example is vesical neck obstruction in children whose symptomatology tends to disappear with growth, particularly during the teens. Damage from such latent pathology may become apparent only in adults when new infections appear during conditions such as pregnancy. It may not be long before more surgery is indicated because abnormal intravesical pressure is detected earlier by electronic devices than is possible by cystoscopy today. Also, resistant gram-negative organisms will plague us like the staphylococcus problem unless urinary tracts can be rendered more nearly normal earlier to resist and recover from bacterial invasion without the chronic use of drugs.

TEMPORARY URINARY DIVERSION

To control infection, relieve obstruction, or improve renal function, it is frequently necessary to divert the urine temporarily by means of a urethral or suprapubic catheter, ureterostomy, or nephrostomy. Certainly fewer routine catheterizations are required nowadays because midstream urine collections are adequate for examinations. Also, preoperative catheter drainage is used less because of better understanding of renal failure. However, there are still excellent indications for single catheterizations as in transient retention after surgery or delivery. If infection occurs and persists afterward, it is a sign that organic obstruction may exist and investigation is indicated. After inserting a catheter through an infected area, one should protect the patient with antimicrobial agents during the period of possible bacteremia. If a catheter is indwelling longer than forty-eight hours, there will always be associated infection around it. It must be remembered that indwelling catheters are indicated to render a urinary system more nearly normal than previously. Usually patients do not have systemic symptoms of infection if good drainage is maintained no matter how turbid the urine nor how much mucoid reaction around the tube. Drugs may keep cultures negative, but they will not clear the surrounding infection as long as a foreign body is present. Also there is danger in building up drug-resistant strains of bacteria. Antibacterial agents are indicated again when the catheter is removed, particularly during the first week when there is low-grade obstruction from edema. As the urinary tract heals and becomes more normal, the infection will clear itself gradually without further use of drugs. An example is the patient with benign prostatic hyperplasia in retention. Originally his urine is sterile, but after two days of catheter drainage, infection occurs. Following prostatectomy, the catheter is removed and the patient is treated with drugs for about a week until the edema subsides. The urine remains grossly infected, but usually the patient is relatively asymptomatic. Gradually, over a period of three months as the prostatic fossa heals, the urine clears and becomes sterile without drugs if the obstruction has been relieved entirely and the bladder is normal.

EXPLAINED PYURIA

Infection that persists postoperatively in many cases must be considered differently even though the patient's symptoms and findings are greatly improved. Certain structural changes are irreversible to the point that infection cannot be eradicated no matter how excellent the surgery to remove the primary cause. Not infrequently there is incomplete removal of obstructing or devitalized tissue that is a nidus for continuing infection. This is seen, for example, more often following transurethral resections than open prostatic surgery. Unfortunately, postoperative complications like a stricture may be the cause for persistent pyuria. Every effort should be made to correct such conditions. On the other hand, if the pyuria is explained, physicians should not be disturbed and should be cautious about overtreatment with drugs. Also there is evidence that, following correction of obstruction to the point that abnormal pressure is relieved, the body tolerates infection better and indeed builds up some immunity to the persisting organisms. This principle still is a clinical observation and requires judgment in its application.

BACTEREMIC SHOCK

One should be alert to the possibility of gram-negative septicemia and a secondary endotoxic shock from peripheral vascular dilatation which may follow instrumentation or surgery across an infected area. Frequently there is a characteristic lag period before the bacteremia occurs, and with shock the condition is particularly serious in older individuals because of the likelihood of coronary insufficiency. Current treatment measures are chemotherapy, vasopressors, high doses of steroids, and, possibly, hypothermia or aldosterone.

PYELONEPHRITIS

Pyelonephritis is not well understood yet, either in its origin or pathological definition. It is probably caused by factors other than bacterial infection alone. The concept that simple contamination of the lower urinary tract, whether spontaneous or iatrogenic, causes an increased incidence of pyelonephritis has not been confirmed. For example, females have short urethras and ten times as many urinary infections as males, yet the ratio of pyelonephritis is nearly equal between them from autopsy figures. The idea of direct lymphatic connections between the bowel and the urinary tract to account for the predominance of coliform infections is based on fragmentary evidence. If this were true, there should be more urinary infections associated with diarrhea or constipation. Out of the reported frequency of pyelonephritis, it is uncommon to find as the cause direct bloodstream invasion from a distant focus of infection. The relationship of vascular disease to pyelonephritis is much more conspicuous. Experiments demonstrate that bacteria do pass through the kidney. Some apparently are taken up by a reticuloendothelial system, and yet a large proportion of an arterial innoculation still can be recovered from the renal vein. Bacteria injected into a renal artery do not appear in the urine promptly like phenolsulfonphthalein dye, because most of them are too large to pass through a normal glomerulus. However, there is a delayed recovery of organisms, as if in some manner they erode through a nephron into the collecting system. Why the kidney is more susceptible to infections, particularly of the coliform group, than other parenchymal organs is still a mystery. The roles of vascular disease, lymphatic obstruction from earlier infections, mechanical trauma, biochemical factors such as the anticomplementary role of ammonia, autoimmune reactions, and hypertension are currently being investigated as possible factors.

The emphasis still should be to discover and correct contributing lesions within the system because at autopsy one-third to one-half of cases of pyelonephritis have associated obstruction. Most infections in girls occur after the diaper period and an organic obstruction must be ruled out. Neurogenic bladder patients demonstrate how an infected urine under pressure causes more renal damage than infected residual urine not under pressure. The effect of vesicostomy and ileal diversion on renal function is being studied for comparison with cases treated by catheter drainage alone. Correction of occlusive renal artery disease may enhance resistance to pyelonephritis as well as reduce the ravages of hypertension. The prevention of acute renal failure with improved preparation of patients before surgery and with the prophylactic use of osmotic diuretics in trauma burns and mismatched transfusions can reduce the complication of pyelonephritis from segmental intranephron obstruction. Biopsy of the kidney for cultures is being discouraged as another type of trauma that may accelerate pyelonephritic changes.

TREATMENT OF CHRONIC INFECTIONS

Chronic infections not amenable to corrective surgery should be treated continuously for at least three months. Cultures should be repeated at intervals to detect any change in the infecting organism or its drug sensitivity. Unfortunately, the success rate for complete eradication of chronic infection is low. If the initial intensive treatment fails, suppressive drug therapy for years is indicated in an effort to retard fibrotic changes so detrimental to function. Sulfonamides, methenamine mandelate, and nitrofurantoin are well tolerated for long periods. Their effectiveness has been hard to measure objectively. Whether daily or intermittent long term therapy is the better regime is debated. At present there is a question whether acidifying agents such as methionine, which may retard bacterial multiplication in the urine, may not increase virulence of the organism within the kidney by antagonism to the formation of complement.

PSYCHOSOMATIC FACTORS

Psychosomatic problems may resemble the symptoms of infection. The urinary tract is innervated by the autonomic system and is under hormonal influence. Thus menstrual cycles, pelvic or prostatic congestion from sexual tension, plus fear and anxiety mediated through aldosterone and antidiuretic mechanisms have to be taken into account. One should suspect a functional overlay when symptoms are out of proportion to objective findings and particularly when repeated urinalyses are normal. A more detailed history may reveal that recurrent vesical irritability or urinary tract pain are precipitated by emotional upsets. These symptoms are not easy to relieve and certain cases may need psychiatric evaluation after organic disease has been excluded. By a little extra urological study, it is most rewarding to find unsuspected pathology which when corrected relieves the original "neurotic" complaints.

CONCLUSION

The kidney is an organ of function for many homeostatic mechanisms of the body. In the treatment of any urinary infection, one eye must be always on the lookout for underlying pathology that threatens renal function.

PROGESTERONE THERAPY may produce both objective and subjective regression of advanced or recurrent endometrial adenocarcinoma. Survival is also prolonged in patients who respond to the hormone. Endometrial cancer of long standing and slow metastatic spread is most likely to regress. Progesterone has a more favorable effect on pulmonary than on pelvic lesions, and previous pelvic irradiation reduces the hormone's action. Side effects are few. Because of the maturing effect of progesterone on endometrial epithelium, 17-α-hydroxyprogesterone caproate (Delalutin) was given in intramuscular doses of 750 to 1,500 mg. a week to 27 patients previously treated by irradiation or surgical resection. The tumor showed objective regression in 8 patients; 7 also had subjective improvement.

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Primary Systemic Amyloidosis

A Study of the Variegated Cutaneous Manifestations and Their Biopsy Diagnostic Index in 214 Cases

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WHILE THE CUTANEOUS manifestations of primary systemic amyloidosis represent merely the integumentary aspect of a profoundly systemic disease, they nevertheless offer, when present, one of the best and most easily available means of diagnosis of the disease complex. From the commonplace to the exotic, and in almost surprising permutational fashion, the skin may call the attention of the thoughtful investigator to a multi-system disease. Antithetically, specialized skin (gingivae) without gross involvement may likewise, by means of biopsy, identify the underlying pathologic process. Thus, the integument in its broadest aspect is one of the most reliable, easily available diagnostic structures in the investigative armamentarium. It is emphasized that the above approaches do not in any fashion downgrade the other tests available to the clinician (deep structure open or needle biopsy, Congo red test).

On occasion, clinical diagnostic insights may be precise, clear, and relatively easily arrived at: skin changes, neurological aberrations, progressive cardiopulmonary insufficiency, hemorrhagic phenomena, and organ pathology—all strongly suggesting system amyloid disease in the differential diagnostic process. On other occasions, however, the dermatologic changes, precise or imprecise, may be bound to a potpourri of apparently unconcatenated events leading to clinical indecision, diagnostic quandary, and comprehensive and expensive laboratory testing: just such a complicated pathological event confronted the authors and others[1–8] with a clinical dilemma emphasizing unusual ophthalmological changes, sclerodermoid skin lesions, select muscle atrophy (carpal tunnel syndrome), common gastrointestinal symptoms, and apparently unrelated neurological abnormalities—all climaxed by unusual biochemical findings and strong genetic overtones.

It is, therefore, the purpose of this report to call to the attention of others the various and sundry (often overlooked) cutaneous permutations of primary systemic amyloidosis, to emphasize the value of the skin biopsy and its characteristic changes to especially urge further utilization of the latter laboratory aid, and finally to assess briefly the diagnostic record of the skin change-biopsy model against the other investigative tools available to the clinician. It should be stated early that this record is in need of further implementation.

CUTANEOUS PERMUTATIONS

The dermatologic expressions of idiopathic amyloid system disease are described in fairly great detail in scattered individual case reports. While the disease was reviewed as a total organic unit in several monographs, there are relatively few reports emphasizing the cutaneous features. Eisen[9] observed that 40 per cent of the patients reported demonstrated lesions of the skin and mucous membranes. In a survey of 66 cases, Higgins and Higgins[10] found amyloid deposits in the skin and mucous membranes in 36 per cent of the cases. Thingstad[11] noted 25 per cent with skin involvement.

A cursory survey of the cutaneous features of this disease literally spans the broadest horizons of dermatologic morphology. Single or in combination, there may occur petechiae, purpura, suggillations, and blood containing tumor-like masses. Papules, nodules, tumors, plaques, polypoid excrescences, erosions, ulcerations, sclerodermoid changes, swellings, eczema, scars, atrophy, and pigmentation tend to complete the cutaneous constellation of the disease. Thus, if the physician concentrates his search on so-called "patterned," precise, predictable, recurring skin

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change with disregard for the insidious panoramic skin vistas of the disease, he will remain in the enigmatic zone of diagnosis.

Of 214 cases analyzed, enlargement of the tongue was described in approximately 16 per cent.[9,10,12–40] This figure contrasts with the 42 per cent,[9] 40 per cent,[10] and 44 per cent[11] reported by others. Thus, one cannot escape the conclusion that macroglossia does not occur as frequently as assumed; furthermore, it appears that dependence on the occurrence of this sign as a diagnostic guidepost will lead only to clinical frustration. Where this sign was clinically conspicuous, the manifestations were striking. In 3 cases macroglossia was noted at autopsy.[19,30,36] The changes reported as being present were manifold: xerolingua, firmness, eburnation, thickness, "spading," nodularity, smoothness, hemorrhage, coloration, immobility, indentation, ulceration, enlargement, and tumor formation. Chambers and associates[12] noted the superimposition of a petechial process over the enlarged tongue. Eisen[9] in his first case described prominently dilated veins on the lateral and inferior tongue margins. A scattered purulent discharge on the tongue characterized Ritter's case.[35] In another case,[29] superficial ulcerations and an exophytic mass on the posterior root of the tongue were described. Aphthous ulcers represented the findings in a most unusual case submitted by Reimann and associates.[41] Small nodules were superimposed on tongue enlargement in another.[27] Enlargement of this organ leads to difficulty in talking and swallowing, with resultant weight loss, weakness, and debility.

That primary systemic amyloidosis manifested in the tongue may mimic the commonplace and the rare is evident. Macroglossia with induration and ulceration or both has led to the diagnosis of malignancy of this organ.[28,35,38,42] In one case[38] the clinical impression was allegedly substantiated by a histopathological interpretation of leukoplakia with beginning carcinomatous change. A widely infiltrating process of the floor of the mouth was felt to be compatible with a diagnosis of a sarcomatous process.[22] In another report,[9] lingual pathology was suspected, but the microscopic conclusion was that of a fibrosis. Massive macroglossia coupled with swelling of the neck suggested a neoplastic infiltration of these structures in another.[43]

Blood vessel deposition leads to the most common cutaneous expression of this disease: the hemorrhagic diathesis. Thus, unexplained hemorrhage in the skin in protean disease occurring with generally normal hemostatic mechanisms should suggest the possibility, among other considerations, of systematized amyloid deposition. The lesions reported range from petechiae to purpura, ecchymosis, suggillations, and blood containing tumor masses. There appear to be no limitations as to tissue involvement: face, neck (especially), mucous membranes, thorax, and extremities. Of the cases evaluated, 18.1 per cent demonstrated bleeding in the above tissues.[11,12,18,24,25,28,31,37,41,42,44–62] In one report[44] bilateral "black eyes," in the absence of trauma and ecchymoses of the skin, were noted in 2 cases.

Chambers and associates[12] noted petechiae limited to the face, neck, and hands. Engel[49] observed a case wherein the palms and fingertips were involved in a papyraceous hemorrhagic process. Spider telangiectasias of the face and neck were found in 3 cases.[47,55,63] Bleeding from the mouth,[28] severe recurrent epistaxis,[41,45,54,56,64] diffuse red blotching of the skin,[54] blood blisters beneath the tongue with hemorrhage,[54] bleeding about the face and neck on the slightest trauma,[47] a purple symptomless bleeding in the skin,[48] a sudden pain in the mouth with hemorrhage,[49] an increased tendency to bleed in the skin upon coughing or straining,[49] easy bruising,[50,61] red "spots" on the chest and shoulders,[55] and bleeding from the gums[11,58] have been recorded.

The hemorrhagic features are presumed to be due to vessel infiltration by amyloid. However, the bleeding tendency may be accentuated, at least in a few cases, by virtue of co-existing morphological-physiological hepatic amyloid involvement.[4]

That the papular-nodular-plaque-tumor complex may represent the so-called "classic" skin amyloid depositions is not denied. Yet, in 214 cases reviewed, this integumentary clinical model was found in only 11 per cent. Thus, if this alleged hallmark of the disease is looked for to the exclusion of other cutaneous manifestations, certain of the cases will be overlooked in the clinical diagnostic consideration. That the lesions are strikingly eyeworthy no one will deny. In one case[12] the fingers were thickened and covered with purplish subcutaneous nodules 3 to 6 mm. in diameter. Cooley[17] found the mouth, tongue, lips, and cheeks swollen and of white nodular consistency. Rubbery nodules along the temporal arteries, suggestive of temporal arteritis, were present as well.

In another fascinating case, where a whole complex of skin lesions was present,[41] a variety of changes were described: lentil-sized nodules of the penile shaft, erythematous plaques of the dorsum of the right hand, yellow plaques on the mucous membranes of the lower lip, and papular lesions of the right cheek. Numerous small, flat-topped, yellow-white papules extensively involved the skin and mucous membranes of a patient described by Goltz.[24,65] Irregular subcutaneous nodules of the forearm and neck;[57] large red-brown tumors of the labia, perineum, and perineal region, clinically compatible with fibroepithelioma, condyloma lata, or pemphigus vegetans;[66] transitory papular eruptions of the face and extremities;[67] and xanthoma-like growths of the eyelids[42,68] have been observed. Koletzsky and Stecker[27] noted firm, non-painful, elevated, gray-white nodules on the inner aspects of the lips. They also found firm masses involving the tendon sheaths and ligaments. Antecubital white nodules and palmar subcutaneous swellings represented further findings in their case. The fingers of Gottron's[25] patient were involved in a papular-plaquelike process. Strauss[36] found tumor-like masses in the region of the seminal vesicles. Pearson and associates[57] noted in their Negro patient a mass in the posterior pharyngeal wall. In another patient[26] there was a widespread eruption of transparent and opalescent papules about the head, neck, trunk, and extremities. The mucous membranes were covered with numerous solid, painful, miliary papules some of which were eroded. Waxy, white nodules scattered over the trunk predominated in another case.[29]

Lymphadenopathy, generally not emphasized as a prominent feature of the deposition process, if present offers an accessible structure for diagnosis. Local or diffuse gland enlargement was found to occur in a surprising 11 per cent of the analyzed cases. The nodes were described as being firm, rubbery, shotty, hard, movable, attached, generally non-tender and non-ulcerating.[9,17,18,21,22,29,31,33,35,36,48,56,57,69,70] The cervical units predominated in amyloid involvement; the axillary and inguinal segments were less frequently infiltrated with this pathological material.

Scleroderma-like lesions occurred in the same frequency as the "classic" lesions; that is, in 11 per cent of the cases. Local or diffuse involvement was described by a number of investigators.[9,10,13,15–17,21,22,25,28,31,38–40,43,52,68] In the familial cases reported by Rukavina and associates,[3,4] 8 patients had scleroderma-like changes of the skin of the hands and erythematous-smooth or atrophic fingertips or both. In another series[44] of systematized familial amyloid, sclerodermoid changes of the hands were prominent in one subject. Extensive thickening and hardness of the skin was present in 3 patients.[25,28,38] Generally, however, the changes were most commonly found on the face, chin, and neck. Chambers and associates[12] noted in 1 patient a diffuse, firm, painless, immobile swelling under the jaw and, in another, markedly thickened lips. Thickening limited to the neck structures was observed in 2 patients.[33,34] Whittlesey[71] found that the hands of his patient were involved in a painful, non-pitting, swelling process. Yellow-brown thickening of the lumens of the auditory canals to almost complete closure and areas of infiltration extending from the groin to the rectum represented the unusual findings of Sappington's case.[68] Firm, edematous, sublingual folds,[72] projecting lips,[22] a dry waxy skin,[49] and a hard, tunified lower extremity[73] have also been recorded. Cutis verticis gyrata of the scalp occurred as a prominent facet in another case.[40] Gaupp[21] characterized the skin of his patient as being peculiar, fixed, and rigid, while Barnard and associates[15] described a painless swelling under the chin and lips. Scarring and ectropion with boggy-brown discolored eyelids represented the impressive finding in another case report.[17] Hayman and associates[52] found indurated areas on the heel complicated by purulent drainage in their subject.

Ulcerating and eroding lesions were uncommon. In one series of 6 cases,[12] with predominantly neurological expression, ulcers of the lower extremities were prominent in 3 patients. Lindsay and Knorp[64] described a perforation of the anterior nasal cartilage surrounded by polypoid soft pink material eventuating in nasal obstruction. Ulceration of the skin over the iliac crest,[28] erosions in hemorrhagic areas of the clavicle,[22] painless ulcers of the feet,[73,74] and superficial ulcerations of the lower extremities have been observed. A peculiar moist eczematous lesion of the superior surfaces of the helices of the ears was likewise alluded to.[64]

Variegated pigmentary changes of the skin were found in 12.9 per cent of the 214 cases reviewed. In 9 of these cases[11,18,45,75–80] jaundice was present or developed during the course of the disease. In one series,[12] pigmentation of the body (especially pronounced in the hands and feet) characterized 2 cases. A brownish coloration of the face and hands pellagroid in nature,[81] olive-green pigmentation of the exposed skin,[47] parchment-like darkened integument, striate pigmentation of the scalp and left neck,[73] peculiar pink striations beneath the nails of the fingers and toes,[64] excessive extremity pigmentation,[67] and a pale waxy skin[68] highpoint some of the cutaneous pigmentary changes.

A scattering of the uncommon skin changes are worthy of record. Chambers and associates[12] described the cessation of sweating of the hands and feet in one of their patients. In another they found large painless blisters occurring on neurologically involved lower extremities, secondary to hot water bottle burns. In a male patient[82] erstwhile cirrhosis of the liver was accompanied by a right-sided gynecomastia. Kernohan and Woltman[53] described the skin in their subject as being so sensitive to touch that the patient could not bear the contact of bedclothes. An excruciating skin hypersensitivity from the neck down served as the prominent finding in Findley and Adams' case.[51] Hair loss involving the scalp occurred in 4 cases.[17,25,28,40] Axillary and pubic hair loss was prominent in 2 cases.[17,40] Erysipelas complicated the clinical picture in 4 cases.[26,54,83,84] So commonplace a symptom as pruritus has been reported: in one case the itching was severe,[29] while in 6 other cases pruritus was prominent.[18,58,61,65,75,78]

TISSUE BIOPSY

Awareness of the almost unlimited cutaneous horizons of primary systemic amyloidosis leads the clinician to tissue biopsy, the single most important procedure in diagnosis of this disease. The skin and mucous membranes (buccal cavity, vagina, rectum), tongue, and lymph nodes represent the most easily available sources of tissue that can be profitably studied for amyloid deposition. Recent reports emphasize the value of gingival biopsy as an important diagnostic aid.[3,4,12,44,85–89] The accessibility of this tissue and the apparent amyloid-proneness of its vasculature suggest definite advantages. Its value has been amply demonstrated in secondary amyloidosis. Unfortunately, this tissue source is generally overlooked as a means of detection of the primary type.

That the amyloid of primary systemic amyloidosis combines with the various stains in a capricious manner was noted by nearly all investigators of this disease. Not only was definite staining variation evident in the tissue examined, but variation in stain uptake was striking in the microscopic field being viewed. Many modifications of staining procedures are used to overcome the caprice of amyloid stain selectivity. Hematoxylin eosin, which stains amyloid red, is useful when the amyloid is found in typical sites. However, most cases require not only the H-E stain but special stains and a "stain battery" as well in order to more precisely identify this substance. Some of the more commonly used stains and their amyloid color reactions are iodine and sulphuric acid (blue to violet), Mayer's iodine (mahogany-brown), Verhoeff and van Geison's elastic tissue stain (beige to green), phosphotungstic acid and hematoxylin (reddish-orange), Congo red (red to maroon), methyl or cresyl violet (red to purple), and van Gieson's solution (gray-yellow).

The results and enthusiasm for a stain or series of stains represent the experiences of the investigator reporting them. Michelson and Lynch[90] found that best results were secured when a diluted solution of gentian violet and Congo red was used. They recommend that the preparation be examined instantly after staining even without a cover slip. Dahlin and associates[91] found the methyl violet and methyl green stains most helpful. Rukavina and associates[3,4] secured best results when methyl and cresyl violet and Congo red stains were used. Recent experiences with histochemical stains suggest that they may be of value in the detention of this unusual substance.[24,65,82,92] Vassar and Culling[93] report encouraging results in the identification of amyloid by means of fluorochrome staining procedures.

Histopathologic amyloid changes in the mucous membrane, skin, tongue, subcutaneous tissue, and lymph nodes, when demonstrated, tend to be noteworthy. Mucous membrane amyloid tends to cluster around some of the glandular ducts. An amyloid zone may form around the ductal epithelial lining. In the capillaries the deposition is limited to the pericapillary sheath of Zweifach. Compression and strangulation of blood vessels may occur. In the arterioles, amyloid is deposited externally to the endothelium in the perivascular adventitial tissue including the media with obliteration of the smooth muscle fibers.

In the skin, epithelial thinning and papillary flattening may be conspicuous but by no means constant. The collagen bundles of the cutis and subcutis may be thickened and edematous. Special stains may reveal severe elastic tissue degenerative changes. Scanty masses of amyloid in the region of the arrectores pilorum have been found. Minute deposits have occurred around the sebaceous glands. The membrana propria of the sweat glands may be lightly or heavily involved. Blood vessel involvement may vary from mild to severe embracing the walls and the areas about them. In some cases foci of lymphocytes, plasma cells, and foreign body giant cells have been noted.

Tongue amyloid has been observed to vary from mild to severe and, significantly, without relationship to tongue size. Blood vessel infiltration may vary from slight to extreme, so extreme that a whole microscopic field may contain a plethora of markedly thickened walls. Complete vascular occlusion (amyloid buttons) may be striking. "Collar" amyloid about widely dilated venous lymph channels may be prominent. Extensive deposits of amyloid may permeate the interstitial tissue surrounding and compressing muscle fibers. Atrophy of the muscle fibers may eventuate. The intrinsic musculature of the tongue has in some cases been converted into a homogeneous mass of amyloid material in which small areas of voluntary muscle exist.

In the subcutaneous tissue, in addition to masses of amyloid and blood vessel involvement, "amyloid rings" may be formed by the deposition of this material around individual fat cells. Amyloid deep in the subcutaneous tissue may have the appearance of cartilage.

Lymph gland architectural changes may be noteworthy. Size changes vary from small to large. Color variation may be prominent: whitish, "waxy," grey, grey-red, red, yellow, yellow-brown. Microscopic involvement may demonstrate varying degrees of infiltration. On the one hand, the perinodal fat may be thoroughly riddled with the node itself singularly spared; on the other hand, nodal architecture may be replaced by eosinophilic, homogeneous material.

BIOPSY UTILIZATION IN 214 CASES

Tissue specimens were secured in 60 cases of the 214 reviewed. A total of 93 biopsies were described. Twenty-eight (31 per cent) of this number were limited to the skin.[3,12,16–18,25,26,39–41,43,44,57,62,64,66,73,81,94–97] Of the tissue sections, 8.7 per cent were secured from the tongue.[9,20,38,39,43,66] Eight investigators (8.7 per cent) reported utilization of the gingival biopsy.[3,4,12,44,73,85,96,98] Biopsies of the nasal,[64] vaginal,[43] buccal,[41] and rectal[41] mucosae were likewise recorded. Lymph node sections were reported in 12 per cent of the cases.[17,48,56,62,72,96,99,100]

Of the skin biopsies, 8 were negative for amyloid deposition; significantly, in none of these cases was the skin involved in the clinical process. Five of the 9 lingual sections were definitely identified as containing amyloid.[9,20,39,43,66] In Eisen's case,[9] the first specimen was reported as showing fibrosis and the second as being positive for amyloid. In Warren's case[38] the lingual tissue sections were initially read as being compatible with leukoplakia and early carcinoma.

All of the specimens secured from the gingivae were found to be suggestive or positive for amyloid involvement. All mucous membrane (nasal, buccal, vagina, rectum) biopsies were reported as positive for amyloid infiltration.

Conclusions from the lymph node biopsies were variable and perplexing. In one case[96] the findings were believed to be consistent with amyloid involvement. In 3 cases[17,56,72] the microscopic findings were definitely those of amyloidosis. In one of these,[72] 4 lymph nodes were secured with a positive diagnosis being attained in the second attempt. In Gerber's case[99] the histopathological findings were those of hyperplasia and lipid in the cells of the lymph gland. In another case[48] homogeneous material was found in the vessel walls and underneath the sinuses. In Goldberg's case[100] the microscopic data suggested an acid-fast infection even though other confirmatory changes were conspicuous by their absence. In another case[62] reassessment of the node section revealed definite evidence of amyloid invasion.

Comparison analyses of the clinical index biopsy confirmation index versus the time-honored intravenous Congo red test reveals that in 18 cases where tissue secured at biopsy was positive all of these same cases were reported as negative by the Congo red procedure. It appears that tissue secured from one of the many easily available, clinically involved sites (skin, tongue, mucous membranes, gingivae, lymph nodes) represents the best guarantee of help in diagnosis. It should be noted that these findings do not downgrade the Congo red test; rather, they suggest that it is an eclectic test to be used in those cases wherein clinical organ manifestations are minimal and the pathological findings are moot.

SUMMARY

The integument may provide many clues for the diagnosis of system disease. This observation is particularly applicable to primary systemic amyloidosis. This study would underscore the long-accepted postulate that the "cutaneous clues" must be looked for and above all recognized for what they might represent: a peripheral sign of a protean systemic disease.

In primary systemic amyloidosis the skin changes appear to offer no predictable, precise hallmark. Rather, the skin seems to serve as a terrain capable of manifesting practically any of a variety of changes from the banal to the exotic. These changes become clinically and diagnostically significant only when precisely correlated with other signs and symptoms of universal disease. It appears from this review that the above considerations have not been utilized to the maximum in the investigation of systematized amyloid deposition.

While macroglossia is properly emphasized as one of the primary aspects of this disease, its significance clinically and statistically is limited. The hemorrhagic phenomena as a secondary manifestation of vessel amyloid infiltration offer a valuable diagnostic clue when related to bizarre system disease; this is particularly applicable to those cases wherein hemostatic mechanisms are, in general, found to be normal. The papule-nodule-plaque-tumor complex, while dramatically attractive, appears to represent a statistically limited usefulness in the cases studied. Its absence should under no circumstance point away from amyloid tissue invasion. Lymph gland involvement in this review appears to have a histopathological significance heretofore unemphasized. Significantly, especially in recent case reports, the emergence of scleroderma-like skin changes as a feature of amyloid involvement properly calls attention to yet another variety of skin responsiveness in multi-system disease. This is particularly true of the familial cases reported. A scattering of usual and unusual cutaneous changes completes the peripheral constellation.

While the recognition and correlation of skin change with multi-system disease is of fundamental importance in the ruling in or out of the disease in question, it remains for the biopsy data to finally cement the diagnostic cornerstone. In systematized amyloidosis the biopsy, with its histopathologic hallmarks, represents the apogee of the investigative method. As this set of investigative fortuities does not often prevail in clinical medicine, it may be truly said that never has so little (so inexpensively) contributed so much in the illumination of a clinical quandary: the easy availability of the skin structures, the simplicity of biopsy performance, and the dramatic microscopic demonstration of the amyloid material. To be sure, the caprice of amyloid-stain acceptance remains a problem. However, the use of the stain "battery" and new procedures tends to reduce this handicap.

Clinical recognition and biopsy confirmation of cutaneous amyloid deposition appears, at least in the 214 cases reviewed, not to have been too vigorously exploited. The evidence suggests that the mucous membranes, particularly the gingivae, would be fruitful sites for microscopic diagnosis. That these sites have in general been overlooked in the investigative situation is clear-cut. Whether increased histopathologic utilization of these tissues will effectively reduce the diagnostic dilemma will be clarified only by wider clinical experience. This has particular significance when contrasted to the intravenous Congo red test, as the latter procedure does not materially aid in the diagnostic investigation. While this intravenous test has long been considered to be synonymous with systemic amyloidosis, its value appears to be limited to the clinically obscure and the histopathologically imprecise cases.

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Endometriosis of the Colon

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ENDOMETRIOSIS involving the colon was first described by Rokitansky in 1860, and in 1909 Meyer reported the first case causing colon obstruction. In 1937 Cattell[1] reviewed 104 cases of endometriosis of the colon; in this survey, one patient had an abdominoperineal resection because the lesion was mistaken for carcinoma. Hawthorne and Kimbrough[2] reported that 8 to 10 per cent of menstruating women have endometriosis and 25 per cent of these cases have rectosigmoid involvement. Bowel symptoms due to endometriosis will nearly always bear some association with the menstrual period.

The purpose of this paper is to emphasize the importance of considering endometriosis in the differential diagnosis of a polypoid or constricting lesion in the colon and to call attention to the fact that endometriosis of the colon has rather characteristic radiologic features. No attempt is made to review the subject of endometriosis in general since this is well documented. The pathologic characteristics are also well described although the exact etiology remains unsettled.

ROENTGEN FINDINGS

The roentgenographic appearance depends on the type and extent of colon involvement. The lesions may be serosal, intramural, submucosal, or a combination of these. The lesion usually presents either a polypoid or stenosing appearance. The very striking constant and characteristic feature is an intact colonic mucosa, and an effort must be made to demonstrate this feature. Tenderness and fixation are common, particularly if the examination is made during menstruation. Comparative examinations between and during the menstrual periods may be quite helpful since a striking exaggeration of the findings may be present during the menses. Theander and Wehlin[3] have described a ridge-like filling defect involving the anterior wall of the colon at the rectosigmoid junction which they feel is quite characteristic, being present in 6 of the 8

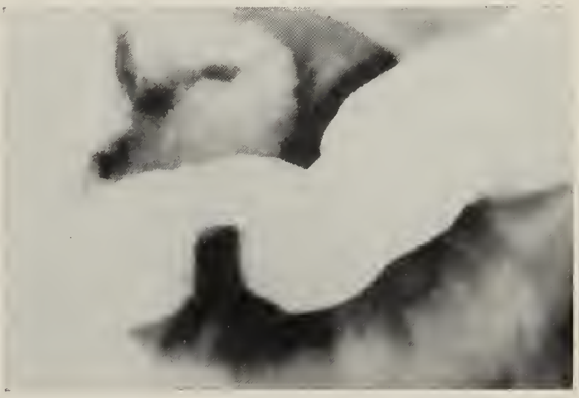

Fig. 1. Case 1. A spot film of the sigmoid reveals an eccentric lesion with smooth margins, the appearance suggesting an extrinsic origin.

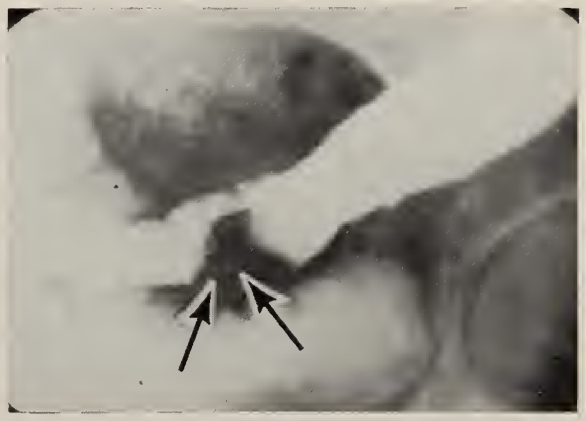

Fig. 2. Case 1. A second spot film with compression made during the same examination as figure 1. A more polypoid appearance is noted.

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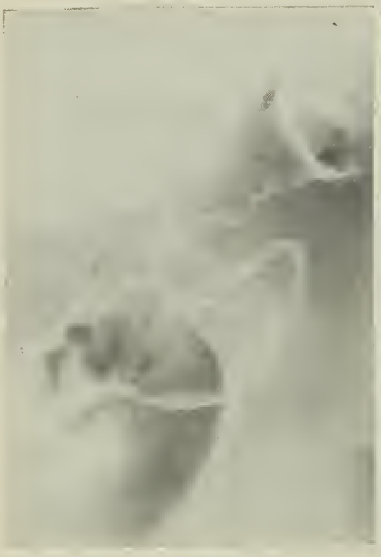

Fig. 3. Case 1. A third spot film following introduction of air demonstrates extrinsic nature of the lesion and the intact mucosa.

Fig. 4. Case 2. A spot film of the rectosigmoid region shows a stenosing lesion; the margins are smooth and tapering.

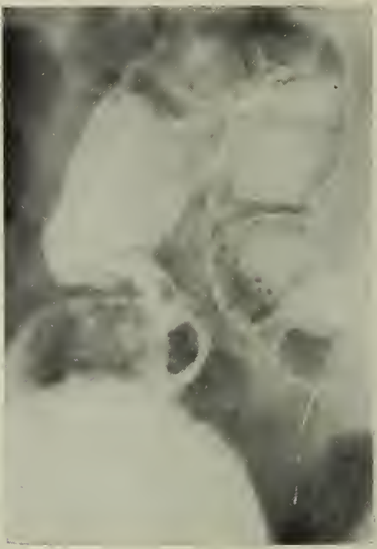

Fig. 5. Case 2. Another spot film of the same area as figure 4 shows the mucosa to be smooth in the area of marked narrowing.

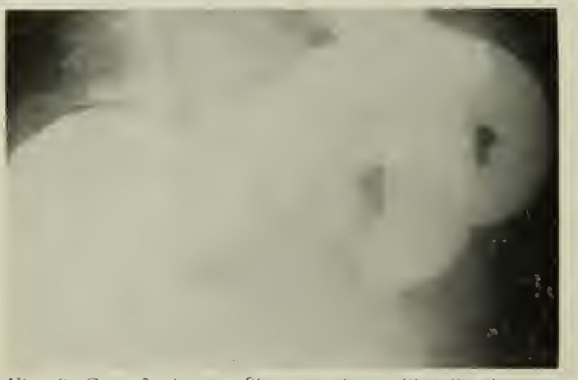

Fig. 6. Case 3. A spot film reveals an ill-defined lesion in the sigmoid colon. Marked redundancy and fixation made it difficult to obtain an unobstructed view. The examination was made in the intermenstrual period.

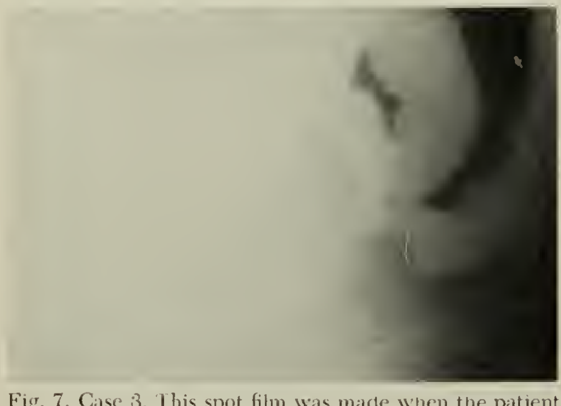

Fig. 7. Case 3. This spot film was made when the patient was menstruating, and a striking increase in the area of involvement is present.

cases they studied. Spjut and Perkins[4] reviewed the radiologic and pathologic findings in 13 proved cases and noted that the colonic mucosa was intact over the lesion in all cases.

CASE REPORTS

Four cases will be briefly presented to illustrate the clinical and roentgenographic findings. This does not include all of the cases we have studied.

Case 1. A 44-year-old white woman was seen in February 1940 because of lower abdominal complaints. The exact nature of her symptoms is unfortunately not recorded. A barium enema examination was reported as showing a "polyp" in the sigmoid (figures 1, 2, and 3). The gross findings at surgery were considered consistent for malignancy, and resection of the sigmoid colon was performed. The pathologist described a "saddle like mass" involving one wall of the colon with puckering of the serosa, the mucosa being intact over the lesion. The microscopic sections were typical of endometriosis.

Case 2. A 47-year-old white woman came to the Quain and Ramstad Clinic in July 1947 complaining of irregular menstrual periods. When menstruation was established she had loose stools associated with lower abdominal cramps. Rectal bleeding had not been seen. A barium enema examination was made, and a "napkin ring deformity at the recto-sigmoid junction characteristic of carcinoma" was reported (figures 4 and 5). Sigmoidoscopic examination revealed a stricture

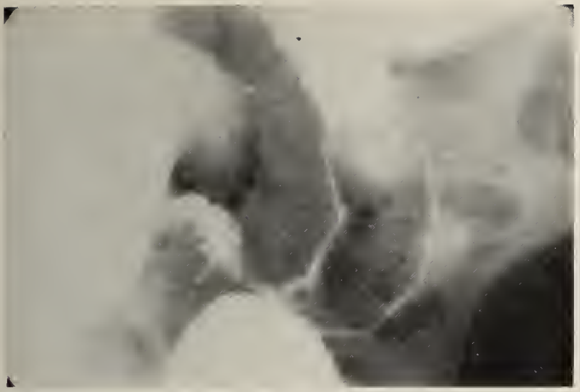

Fig. 8. Case 3. An air contrast spot film taken during the initial examination demonstrates the intact mucosal pattern.

at the rectosigmoid junction beyond which the scope could not be passed. The mucosa, however, was seen to be intact and a biopsy revealed no evidence of tumor. Surgery was performed and the gross findings suggested carcinoma. An abdominoperineal resection was done. The pathologist described a submucosal tumor with marked puckering of the serosa, the mucosa being intact. Microscopically the findings were those of endometriosis involving the wall of the colon.

Case 3. A 48-year-old white woman was seen in August 1961 complaining of lower abdominal cramps and painful defecation during her menstrual periods. A barium enema examination revealed a lesion in the sigmoid colon with an apparently intact mucosa over the lesion. Repeat barium enema was made during the next menstrual period, and this demonstrated a marked increase in the size of the lesion with tenderness on palpation. The appearance was considered characteristic of endometriosis (figures 6, 7, and 8). On surgical exploration, the ovaries and fallopian tubes were adherent to the rectosigmoid colon and dark blood appeared to be present in the adhesions. Hysterectomy, bilateral oophorectomy, and anterior resection of the sigmoid colon were performed. The pathologic findings confirmed the radiographic impression that the mucosa was intact and microscopic findings were those of endometriosis.

Case 4. A 43-year-old white woman was seen in April 1962 during a menstrual period. She complained of severe abdominal pain associated with a nonbloody diarrhea. Similar but less severe symptoms had been present for several years. A barium enema examination revealed a stenosing lesion in the lower sigmoid with an intact appearing mucosa. The examination was reported compatible with endometriosis (figures 9 and 10). Surgical exploration revealed numerous endometrial implants involving the pelvic wall and uterosacral ligaments with adhesions between the pelvis and lower sigmoid colon. Bilateral oophorectomy with anterior resection of the lower sigmoid was performed. Grossly and microscopically, the pathological findings were those of endometriosis.

DISCUSSION

Correlation of bowel symptoms with the menstrual period should alert the radiologist to the possibility of endometriosis of the colon. If a colon lesion is then found, an effort should be made to demonstrate the features which characterize endometriosis. When this is done, I believe the diagnosis can be made accurately and may help to clarify confusing findings at the time of surgery. That endometriosis and carcinoma of the colon can closely mimic each other has abundant documentation. If the lesion can be visualized through a proctosigmoidoscope, the pres-

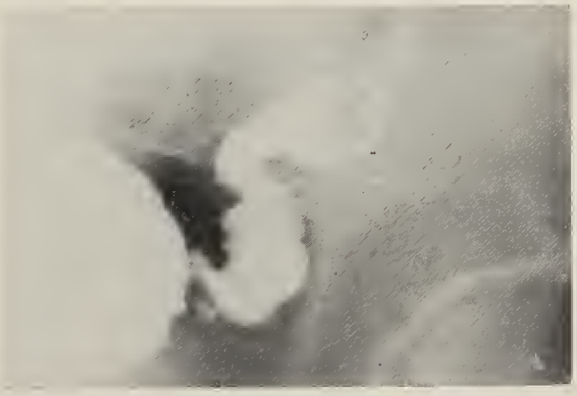

Fig. 9. Case 4. Spot film of the rectosigmoid reveals the stenotic lesion. Radiologically the similarity to carcinoma is apparent. This patient had a clear-cut clinical picture of endometriosis.

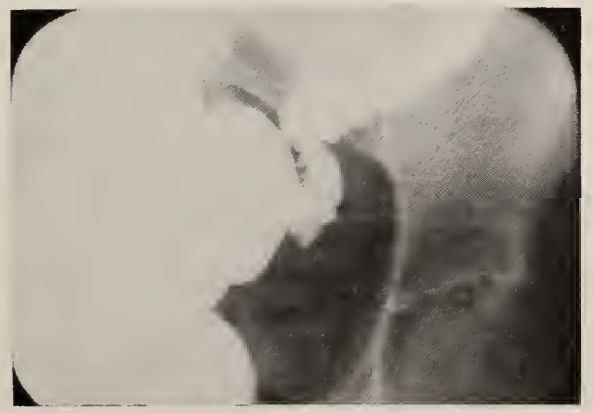

Fig. 10. Case 4. Another film from the same examination as figure 9 reveals better filling in the area of the lesion.

ence of an intact mucosa enhances the possibility of endometriosis as a likely diagnosis.

SUMMARY

It is well known that endometriosis may involve the colon quite frequently and in some cases may strongly resemble carcinoma. The radiologic findings that may be of help in distinguishing endometriosis are described. Four cases are presented to illustrate these characteristic features.

I wish to thank Mr. Rodney Peterson for making the prints and Mrs. Nadine Moszer for preparing the manuscript.

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PLANNED PRETERM DELIVERY for selected Rh-negative-sensitized mothers significantly increases the chances for salvage of their Rh-positive infants. The proper choice of patient and the timing of delivery are difficult, often representing a compromise between fetal maturity and severity of the hemolytic process. The best indication of fetal risk is provided by obstetric history, not by the level or change in maternal antibodies. Sensitized mothers without previous affected infants are most likely to produce a child affected only slightly, if at all. Mothers who have produced a severely affected child or one that died in the neonatal period may expect a severely affected infant. On this basis patients are selected for preterm delivery. Patients regarded as being in the most favorable groups are delivered seven to ten days before the calculated dates of confinement. Those considered most likely to produce a severely affected infant are delivered fourteen to twenty-eight days before the calculated date of confinement unless hydramnios or cessation of fetal activity necessitate earlier delivery. Permitting the patient to go to term greatly increases the risk that the infant will die of severe anemia and hydrops fetalis secondary to far-advanced hemolytic disease. Planned early delivery of 71 Rh-negative patients resulted in salvage of 59 of 73 Rh-positive infants. Thirteen neonatal and 1 fetal death occurred.

C. P. GOPLERUD: Preterm delivery for sensitized Rh-negative mothers. J. Amer. med. Ass. 184: 626-630, 1963.

RESULTS OF REHABILITATION after stroke are determined largely by the extent of cerebrovascular accident and by the patient's age and sex. Properly graded physical therapy after recovery apparently is the key to successful rehabilitation, but no accurate method for predicting benefit from physical therapy is available. Men usually achieve a better return to activity than women. Posture correction and exercise to tolerance should be used for patients 60 to 90 years old until after the thirtieth day.

ROBERT W. BOYLE and PETER D. SCALZITTI: A study of 480 consecutive cases of cerebral vascular accident. Arch. phys. Med. 44:19-28, 1963.

Section on PAIN and DISTRESS

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Chronic Disabling Pain and Some Problems in Anesthesia

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THIS OCTOBER 1963 presentation of the Section on Pain and Distress of THE JOURNAL-LANCET is concerned essentially with chronic disabling pain as well as some problems in anesthesia. Each of us encounters, and somehow must manage, different aspects of the problem of the relief of pain. In the review of Dr. Keating's book on anesthetic accidents an attempt is made to impress the reader with the prime importance of unusual care in the use of anesthetic agents for the relief of pain because of the very real dangers inherent in the use of such powerful agents for such a purpose.

The review of the book on electrical anesthesia, by Dr. Robert E. Smith, again points up the necessity for care in the clinical application of an attractive method of anesthesia. The proper place for the detection of possible dangers in any form of anesthesia of course is the laboratory, but laboratory investigation inevitably stimulates both hope and imagination. The engaging prospect of the possibility of producing surgical anesthesia electrically has attracted the imagination of most of us for a very long time. The current attack on this project may bring the much-sought-after results or at least help to bring them about. As Dr. William J. Mayo once suggested to me, at the very center of the entire problem of pain should be anesthesia in all its aspects. A part of this picture is to be found in the review of the book on the diagnosis and management of pain, published in this issue.

About four years ago I described the efforts which I was using at that time for the control of chronic pain by the passing of electrical energy through a peripheral nerve.[1] In the period in which this paper was published we were referring, for one thing, to the application of heat in the particular project then under way. I am not so sure now that the word "heat" is an accurate substantive to denote what the action was in the experiments I conducted. Currently, investigation is under way at the Veterans Administration Research Hospital in Chicago to reexamine and re-appraise the results observed four years ago, to determine, if possible, if there is more to be learned about how the results were obtained and why. That is, the effects noted may have come about because of the passage of an electrical current through the nerve and not necessarily because of the heat produced.

Now, after reading the book, *Electrical Anesthesia*, by Dr. Smith, in the background provided by the results obtained from the application of electrical current to a peripheral nerve in 1957, I am led to speculate that each of these two efforts might help in some degree to explain the

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Right hind paw of a white rat used in the first successful experiment on December 12, 1957. This rat chewed off the 3 lateral digits of the paw, indicating that anesthesia was present. The paw also was paralyzed. The animal was killed before paralysis disappeared. Other rats recovered from anesthesia and paralysis in about a month. This control of the function of a peripheral nerve is the objective.

Reproduced with permission from Lundy, J. S.: Control of chronic pain. Proc. Mayo Clin. 34:200-206, 1959.

results obtained in the other. That is to say, my application of current to a single peripheral nerve may have made the study much simpler, and thus the ultimate potentials more apparent, than would have been true had the attempt been made to apply electrical energy to the whole animal in the face of the great combination and complexity of the entire central nervous system. I refer specifically to the figure reproduced herein from my paper of 1959, showing the right hind paw of the white rat after the procedure done on December 12, 1957. Personally, I have been able to obtain somewhat similar results in a few rats, sufficiently so to encourage us to proceed with the investigation in Chicago.

What I should like to do now is to offer the facilities of this Section on Pain and Distress to those also concerned with the problems such as are discussed in this issue. This section actually provides a very effective forum for the presentation and exchange of ideas on these subjects, and we therefore extend an invitation to those who might wish to contribute material for publication in the hope that perhaps a final solution of some of these problems might be found thereby.

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THE ETIOLOGY of trigeminal neuropathy must be clearly understood for effective therapy. A major causative factor is trauma to the nerve, but symptoms occasionally arise from undetected neoplasms or intracranial aneurysms. A frequent cause of the sharp, brief attacks is trauma associated with dental procedures and wearing of dentures. The neuropathy is especially likely to develop after removal of impacted third mandibular molars because of proximity of roots to the inferior alveolar nerve. Another source is pressure of dentures after alveolar resorption leaves the mental foramen exposed and permits pressure damage of the mental nerve. Pressure from chewing or occlusion of lower-denture with maxillary teeth may cause intermittent symptoms. The symptoms frequently are eliminated by reduction of denture base over the region of the mental foramen. Sensory neuritis that affects the trigeminal nerve and other sensory nerves of neck and trunk may be a complication of hydroxystilbamidine isethionate therapy. Other causes of trigeminal neuropathy include needle trauma, postextraction complications, Hodgkin's disease, herpetic infection, and insect stings. The neuropathy developed in 61 patients. The condition appeared after dental surgery in 21, denture trauma in 8, other operative trauma in 8, use of hydroxystilbamidine isethionate in 7, miscellaneous causes in 10, and unknown causes in 7.

NORMAN P. GOLDSTEIN, M.D., JOSEPH A. GIBILISCO, D.D.S., and JOSEPH G. RUSHTON, M.D.: Trigeminal neuropathy and neuritis. J. Amer. med. Ass. 184:458-462, 1963.

Lumbodorsal Fascia and Related Structures as Factors in Disability

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OVER A PERIOD OF YEARS, the author has made a study of a pathologic condition of soft tissues in the lower part of the back. Outstanding feature of the condition is rupture of the lumbodorsal fascia, with injury and subsequent fibrosis of fat tissue underneath the fascia. This type of abnormality develops characteristically at 2 sites in the lower part of the back; it may remain in an asymptomatic state for indefinite periods of time, only to give rise to disabling clinical symptoms when conditions become favorable. The lesions may be investigated by means of local anesthetization and, when they are identified as a cause of disability, may be corrected by surgical intervention.[1–9]

ANATOMIC RELATIONSHIPS

The importance of fat tissue as a factor in painful disability was emphasized by Copeman and Ackerman[10] who, by clinical observations and anatomic dissections, were convinced that herniations and edema of fat lobules give rise to clinical syndromes characterized by pain. It has also been noted that relief can be obtained in some instances, although the results are erratic and unpredictable.[11] It should be emphasized that we found the anatomic appearance of the fat lobules to be normal, except for edema.

Efforts to explain some of the complex syndromes involving the lower part of the back, frequently combined with pain reference to the lower or even the upper extremities, necessitated a correlation of anatomic abnormalities with the pathophysiologic effects representing the patients' symptoms. Using the description by Copeman and Ackerman of the "basic fat pattern" as a guide was helpful, although it became evident to us that only certain portions of this extensive structure were affected with any degree of regularity. The most common site of tenderness in the lumbar region was located over the lateral portion of the sacrospinalis muscle at the level of the upper margin of the iliac crest; in the sacral region tenderness was most frequently found in the paraspinal structures at the level of the third sacral vertebra. At the latter site, in the sacral area, a fortunate development was the discovery of a recent tear of the fascia with shreds of the fascia and bloody fluid appearing in the operative wound; the subfascial fat showed normal appearance.

The anatomic abnormalities, as they are manifested at operation, consist of changes in the fascia, represented by complete defects or a marked to moderate thinning, and adhesions between the fascia and the subfascial fat, the latter showing variable degrees of fibrosis. These findings are essentially similar at the 2 sites in which they occur.

The only factor which may be considered operative in the development of such lesions at the 2 specific sites is muscle contraction. In the lumbar region a portion of the latissimus dorsi muscle arises from the fascia; in the sacral region a portion of the gluteus maximus muscle arises from the fascia. It is likely that such muscle action can cause tears of the fascia. As a rule, the continuity of the torn fascia is restored by ordinary processes of repair, although often incompletely.

It is realized that observations made thus far are based on inadequate studies of the complete anatomic picture. It is likely that many individu-

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als harbor lesions of this kind which may be silent or cause clinical manifestations which are not recognized. For a more thorough investigation of this problem from the anatomic aspects, a search should be made for this type of abnormality in cadavers used in dissecting rooms; this would provide a more complete knowledge of the total anatomic derangement.

PATHOPHYSIOLOGIC EFFECTS

The harmful effects arising from lesions of this nature include reactions which involve both the somatic and the autonomic nervous systems.

Among the somatic nerve effects, the most common and most conspicuous are pain and tenderness. Both of these phenomena are referred to other portions of the body in a spinal segmental or sclerotomic pattern of distribution. Also, both are more marked at secondary, or reference, sites than they are at the sites of origin or trigger points.

Our knowledge of referred phenomena in deep somatic structures was obtained or clarified by the studies of Kellgren,[12] Lewis and Kellgren,[13] Inman and Saunders,[14] Sinclair, Weddell, and Feindel,[15] and others. Thus, it is a fact that reference of pain and tenderness may develop in any skeletal structure which receives its sensory nerve supply from the same spinal nerve as that in which impulses arise. The pattern of supply may differ greatly from that of the dermatomic supply overlying the skeletal tissues.

Referred pain and referred tenderness are similar in the sense that both may arise from the same trigger point and involve the same extent of distribution. They differ in their time relations of onset. Referred pain may appear almost instantly, whereas referred tenderness may require several hours for development. Likewise, referred pain will disappear immediately after impulses from the trigger point are abolished, whereas referred tenderness may require several hours for subsidence. The difference between referred pain and referred tenderness is explained by Sinclair, Weddell, and Feindel[15] as follows: "The anatomical basis of the physiological processes concerned in the production of referred phenomena is the branched axone. In any given case there are 2 main mechanisms at work: the first of these is the misinterpretation by the central receiving apparatus of the source of the painful impulses, and the second is the production in the periphery, as a result of antidromic impulses, of metabolites which at first stimulate the nerve endings there and later damage them. It is probable that the operation of the first of these mechanisms gives rise chiefly to referred pain, while the chief result of the operation of the second is referred tenderness, but both mechanisms must be considered in relation to either phenomenon."

For practical purposes, the extensive investigations of Inman and Saunders[14] are most helpful in the analysis of pain syndromes affecting the back and the upper and lower extremities. Their pain charts are useful in identification of the sclerotomes, which are involved in certain complexes of disabling severity.

Among autonomic nerve effects, it appears that the most common clinical manifestations are vasomotor disorders, noted particularly in the form of cold hands and feet, pallor, and sweating. Trophic conditions are represented most commonly by persistent edema of hands and feet. Another important feature is the development of sensory defects, which are frequently unanatomic in their distribution. Muscle weakness, which cannot be satisfactorily explained by pain on use, is believed to be due to autonomic nerve dysfunction.

Disorders of the autonomic nervous system are mentioned as concomitants in the experimental study of pain by Inman and Saunders[14] and Campbell and Parsons.[16] Kuntz[17] states: "Afferent impulses arising in any part of the body may elicit reflex reactions carried out through autonomic nerves." According to Wolff and Wolf,[18] "The management of pain constitutes a serious clinical problem, not only because of itself, as a distressing experience, but also because continued pain has been demonstrated to have deleterious action upon such vital organs as the heart and kidneys." As a rule, these sequels to painful disorders cannot always be properly evaluated when attention is directed primarily to somatic disturbances.

CLINICAL CONSIDERATIONS

The clinical manifestations consist of pain in the lower portion of the back, with varying degrees of reference to the lower and upper extremities or both. The referred phenomena include pain and tenderness.

On the basis of the anatomic abnormalities and the clinical features resulting from these, 3 different syndromes of pain can be identified:

1. The midlumbar (second lumbar nerve) syndrome. This is derived from impulses evoked by the lesion in the lumbar region, situated very constantly over the outer portion of the sacrospinalis muscle, at the level of the upper margin of the iliac crest. The pain and tenderness are located most conspicuously in the lower lum-

bar, upper sacral and sacro-iliac regions, and along the iliac crest. In some instances, pain is referred to the groin (figure 1).

2. The midsacral (first sacral nerve) syndrome. In this, the primary lesion (trigger point) is situated in the paraspinal region at the level of the third sacral segment. The clinical picture is characterized by pain in the lower portion of the back, the gluteal region, and the lateral aspects of the thigh, leg, and foot. Tenderness is most marked and most constant in the gluteal muscles (figure 2).

3. The latissimus dorsi (sixth, seventh, and eighth cervical nerve) syndrome. The latissimus dorsi muscle, through its aponeurosis, arises, in part, from the lumbodorsal fascia in the lumbar region. The tendinous and neuronal elements of this muscle apparently extend, within the fascia, as far distally as the lower sacral level.

When a tear is produced in the lumbodorsal fascia, the injury also involves the tendinous and neuronal components of the latissimus dorsi muscle, subjecting them, thereafter, to irritation. When this occurs, reference of pain and tenderness will result, again in a spinal-segmental, or sclerotomal, pattern. As the latissimus dorsi muscle is innervated by the sixth, seventh, and eighth cervical nerves, referred phenomena may appear in any other skeletal structures supplied by these nerves. The extent of this supply includes the entire upper extremity, the pectoral muscles, the scaleni, the serratus anterior, portions of the scapular region, and the spinal and paraspinal structures of the cervicodorsal region. Familiarity with this process of extensive reference is helpful in identifying many disabling conditions which would otherwise be obscure.

Of these 3 syndromes, a variety of combinations is possible, from the occurrence of a single syndrome to the involvement of all 3. In addition, the disability may be bilateral.

DIAGNOSIS

As in any clinical condition, the subjective and objective manifestations are of prime importance. In the examination, emphasis is placed on the elicitation and extent of tenderness in the back and the extremities. Familiarity with the extent of the sclerotomes involved in these lesions facilitates identification of the different syndromes.

Fig. 1. Diagram showing sclerotomal distribution of second lumbar nerve. Solid markings (left side of figure) show extent of innervation of bony structures. Hatched areas show nerve supply to muscles and related soft tissues.

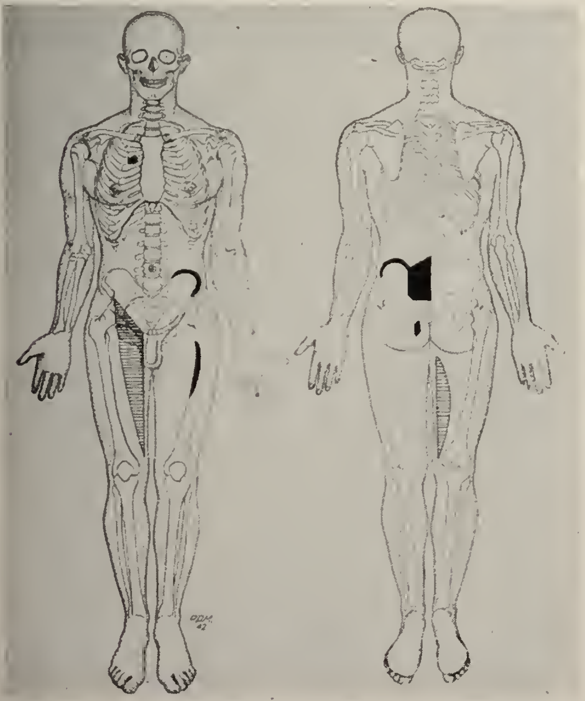
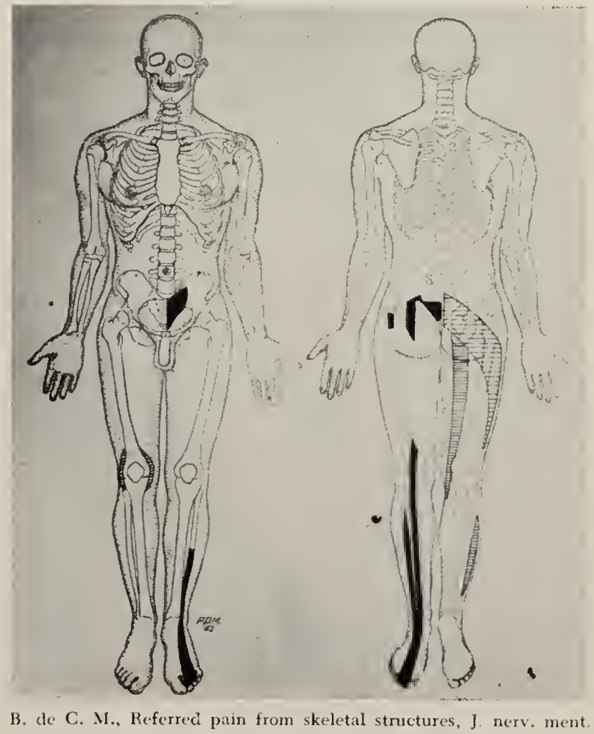


Fig. 2. Diagram showing sclerotomal distribution of first sacral nerve. Solid markings (left side of figure) indicate bony structures supplied by this nerve. Hatched areas show extent and distribution of nerve supply to muscles and related soft tissues.



Photos adapted by permission from Inman, V. T., and Saunders, J. B. de C. M., Referred pain from skeletal structures, J. nerv. ment. Dis., Williams & Wilkins Company, Baltimore, 99:660, 1944.

A search is also made for hyperalgesia at the trigger points (sites of the primary lesions). In this it is repeatedly found that the intensity of the tenderness is less here than it is at the secondary, or reference, site. It is often necessary to compare sensitivity at a suspected trigger point with that of the corresponding location on the opposite side of the body.

The final and most conclusive test is that of local anesthetization. This consists of injection of 4 to 5 cc. of local anesthetic into the suspected trigger point. The injection is carried out to deposit the anesthetic into the subfascial tissues. In the course of the injection it is usually possible to evaluate the integrity of the lumbodorsal fascia by the resistance to the penetrating needle.

In anesthetizing the elements of the latissimus dorsi muscle, the local anesthetic is deposited on or into the fascia, proximal to the lesion. In this, the needle is advanced to engage, but not penetrate, the fascia.

Following injection of the local anesthetic, the response may be immediate or delayed. Referred pain is eliminated promptly within a few minutes after the injection. Referred tenderness requires two to four hours after administration for disappearance. This delay in the subsidence of referred tenderness would favor the viewpoint of Sinclair, Weddell, and Feindel[15] that referred tenderness may be due to liberation of metabolites at the reference site.

If no favorable response is obtained from the anesthetization, it may be concluded that the pain complex is derived from other sources. In some instances pain may be referred contralaterally, in which case it would be advisable to consider the corresponding sites on the opposite side of the body. Obviously, only a certain proportion of cases of painful back are caused by these mechanisms. A reasonable estimate would be 25 to 35 per cent.

Aside from the pain complexes that involve primarily or exclusively the portions of the lower back, it is not uncommon to find clinical pictures in which the symptoms are located predominantly in other regions, particularly the extremities. This may take a number of different forms. Here the disability may develop spontaneously without any known cause. It may manifest itself as a marked, or prolonged, form of disability following extensive or even trivial injury, in which the symptoms are out of proportion to the recognizable pathologic condition. In such instances, the mechanism is that of summation of impulses.

A combination of lumbar and sacral lesions on the same side may present a clinical picture which, in many respects, is similar to that of a protruded intervertebral disc in the lumbosacral space. In a disc lesion at that level, the nerve root which is irritated is the first sacral, producing identical manifestations as the first sacral syndrome here described. In addition, the second lumbar nerve syndrome here described would be similar to the pain which may be expected from the damaged structures in the spinal canal in case of rupture. In this analysis, attention is called to the pain charts of Inman and Saunders[14] showing that the deep skeletal structures of the lower lumbar and upper sacral vertebrae are innervated by the second lumbar nerve. On this theoretical basis, the clinical pictures arising from these 2 mechanisms should be identical. The procedure of local anesthetization of the sites, as here described, is helpful in differentiating the 2 processes.

TREATMENT

In some patients relief from pain is obtained for prolonged periods of time following a diagnostic injection of local anesthetic. Under such conditions nothing further is needed. As a rule, however, it is necessary to correct abnormalities of this nature by surgical means.

Operations are carried out under local anesthesia. A transverse incision about two inches long is made over the trigger site, through skin and subcutaneous fat, exposing the lumbodorsal fascia. The subfascial tissues are then infiltrated with local anesthetic. The fascia is incised transversely. The subfascial structures, consisting of fat and fibrous tissue, are dissected from the ventral surface of the fascia. The dissection is carried ventrally to a layer of fascia covering the sacrospinalis muscle. The subfascial fibroadipose layer is dissected free from the deeper layer of fascia and then resected over an area about 2 to 3 inches in diameter. Bleeding vessels are ligated. A soft rubber drain is inserted into the wound and sutured to the skin; this is to be left in place for a period of four to six days. Skin sutures are used at each end of the incision.

The procedure is similar in the 2 locations. In the lumbar region, it is not unusual to find enlarged, edematous fat lobules near the lateral border of the sacrospinalis muscle; these are left intact. In the sacral region, similar fat masses are encountered in the deeper layers; these may also be left in place. As a rule, no serious hemorrhage develops during operation. In some instances it is advisable to insert a pack into the operative wound. Oxidized cellulose (Oxycel) packs, wrapped in a single thickness of gauze, are used for this purpose. These are removed in forty-eight hours. Hematomas may also follow the operation, even when there is no evidence of postoperative bleeding. In such cases removal is carried out about forty-eight hours after operation. The most effective method for this consists of loosening the clot by injection of a 1 per cent solution of procaine into the mass. Much of the clot may then be removed with an applicator. Some of the deeper masses can be eliminated by pressure.

Adequate drainage is most necessary to prevent accumulation of blood and serum in the wound since, in these circumstances, the symptoms promptly recur. The object is to produce a sinus which heals gradually over a period of three to four weeks.

Postoperative care is relatively simple. The patient is allowed freedom of activity as he pleases. Analgesics are given and dressings are changed as needed. The patient is discharged from the hospital in one to three days after operation.

During the period of convalescence, activity is encouraged as tolerated. When complete relief of disability is obtained, physical activity should be increased from day to day. Return to work depends on the occupation of the patient. In case of sedentary or supervisory work requirements, activity may be resumed earlier. Ordinarily, a period of four to six weeks after operation is adequate for restoration of function.

The surgical principle involved in this operation is that of denervation of the pathologic tissues at the sites of injury.

RESULTS OF TREATMENT

Since the time when this relationship was recognized, approximately 200 patients have been subjected to operation. In the majority of cases, the results were uniformly satisfactory in the sense that the patients were promptly and completely relieved of their disability. Under the circumstances of treatment, it has been impossible to carry out a program of adequate follow-up and, for that reason, a statistical analysis cannot be presented. However, a significant number of patients are known to have retained their status of relief for periods of one to four years.

It may be expected in any clinical problem that failures will result. An adequate explanation is not always apparent. In some cases, coexisting pathologic conditions of a different nature were present; in some of these the response to local anesthetization was favorable for partial or complete relief and, in that sense, was misleading.

Recurrence of symptoms, traceable to the approximate site of a previous operation, was noted in only 2 instances. In both of these the cause was obviously a reinjury due to accidents. The damage to the fascia and related structures was evident about 1 inch from the operative scar. In both, the nature of the lesion was verified by local anesthesia; in one it was corrected by operation.

DISCUSSION

From observations of these abnormalities over a number of years, it has been possible to develop some definite convictions regarding the powerful influence of the anatomic lesions as a factor in musculoskeletal disabilities. It is understandable that fat tissue would be considered relatively unimportant as a cause of painful disorders. Yet, the concept described here seems to provide a suitable answer to many obscure problems afflicting mankind.

From the anatomic viewpoint, the arrangement is that of a relatively powerful muscle attachment to a relatively weak soft tissue structure. Under these circumstances, it is not difficult to understand the mechanism of rupture at the weakest point. Then, by the natural process of repair, it is expected that a freshly injured fibrous layer will adhere to contiguous structures. With additional episodes of similar trauma to the subfascial fat, the fibrosis extends into the deeper layers. The chronic state of painful disability probably ensues from trauma or toxemia, as in infections, although it is often impossible to recognize any exciting factor.

Since this type of lesion has, thus far, been studied only from operative findings, it is again emphasized that more complete investigation should be undertaken in dissecting rooms. In addition, a search should be made for similar lesions elsewhere, particularly in locations where similar anatomic mechanisms may be operative (muscle attachments to soft tissue structures). Other muscles which arise, in part, from the lumbodorsal fascia should receive attention: the internal oblique, quadratus lumborum, and serratus posterior inferior.

Pathophysiologic effects derived from abnormalities of this kind are predominantly somatic in nature and consist of pain and tenderness referred in a spinal-segmental (sclerotomal) pattern of distribution. Since this form of reference has been described only in recent years, it is not generally known. The pain charts of Inman and Saunders have been the principal guide in the identification of various sclerotomes.

It is necessary to know the difference between referred pain and referred tenderness. In this, the important aspect is that of the time relations in the development and the subsidence of the 2 phenomena. It is again emphasized that, when a trigger point is anesthetized, referred pain should disappear within minutes or seconds. Referred tenderness, however, requires several hours for subsidence. Due to overlap in these time relations it is sometimes advisable to reinject a trigger point about two hours after the original anesthetization.

It is axiomatic in medical practice that, when the pathologic condition is understood, together with the pathophysiologic mechanisms, the clinical manifestations become clarified; further, the treatment becomes obvious when the lesion is identified and accessible for correction.

SUMMARY

A review is made of a form of disability which affects the musculoskeletal structures of the back and the upper and lower extremities. The pathologic anatomy is that of "rupture of the lumbodorsal fascia with subfascial fat fibrosis." The pathophysiologic effects are chiefly referred pain and referred tenderness; autonomic nerve concomitants are also encountered. The clinical manifestations consist of 3 distinct syndromes of pain involving the sclerotomes of the second lumbar; first sacral; and sixth, seventh, and eighth cervical nerves. The diagnosis is made or verified by local anesthetization of suspected trigger points. Treatment consists of surgical correction of the anatomic lesion. Results of treatment have been uniformly satisfactory.

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ANTIHEMOPHILIC GLOBULIN (factor VIII) is elevated in patients with cancer or in those undergoing operation. Increase in antihemophilic globulin is indistinguishable from accelerated generation of thromboplastin, a process that apparently is related to the heightened incidence of thromboembolism in malignant disease and in the postoperative state. Accelerated clotting seems associated with tissue injury, with or without inflammation. Elevated values of antihemophilic globulin do not result from small localized tumors with little tissue damage, but more extensive lesions or benign diseases with inflammation usually are accompanied by increased activity of the factor.

MELVIN A. AMUNDSEN, JOHN A. SPITTELL, JR., JOHN H. THOMPSON, JR., and CHARLES A. OWEN, JR.: Hypercoagulability associated with malignant disease and with the postoperative state. Ann. intern. Med. 58:608-616, 1963.

Book Reviews on Pain . . .

ELECTRICAL ANESTHESIA, by Robert H. Smith, M.D., 1963. Springfield, Illinois: Charles C Thomas. 54 pages. Illustrated. $4.00.

This slender volume is a monograph in the American Lectures in Anesthesiology series. It has 54 pages and is printed on standard book paper, but it has no index. Eleven line drawings supplement and illustrate the remarks of the author, who is assistant professor of anesthesiology in the University of California Medical School at San Francisco. Dr. Smith gives a very brief review of the history of the subject and includes and remarks upon the contributions of the few persons studying this problem in the past who have reported their results. He mentions the generators and the frequency, duration, amperage, and voltage of the electrical current used, the combination of alternating current with direct current, the pattern of current application, the placement of electrodes, how the electrodes are held in place, composition and construction of electrodes, evaluation of anesthesia, physiologic changes secondary to narcosis, and the effects of electrical energy upon species other than the dog. He closes by presenting an invitation to any interested persons to communicate with him, observing that the facilities which have been made available to him will be made available to other researchers. This invitation to learning and to investigation is encouraging to those who would like to do some research on the problems in this field. Undoubtedly a response will ensue which, it may be hoped, will augment the work of individual workers by the benefits of mass effort. This book, although concerned principally or essentially with electronarcosis, is particularly interesting to those who have to deal with problems of chronic pain.

JOHN S. LUNDY, M.D.
Chicago

ANAESTHETIC ACCIDENTS: THE COMPLICATIONS OF GENERAL AND REGIONAL ANAESTHESIA, edited by V. Keating, 2d ed., 1961. Chicago, Year Book Medical Publishers, Inc. 288 pages. $5.50.

The author of this most important book has crowded more fundamental material into it than one could hope to expect. The 15 chapters deal with: (1) circulation during general anesthesia, (2) cardiac failure during general anesthesia, (3) general anesthesia and respiratory function, (4) pulmonary complications, (5) intravenous barbiturates, (6) neurologic complications in general anesthesia, (7) complications of local anesthesia, (8) complications associated with spinal anesthesia, (9) complications of endotracheal anesthesia, (10) effects of position on anesthesia, (11) side actions of relaxants, (12) infected anesthetic apparatus, (13) explosions and fires due to anesthetics, (14) safety precautions for injections, and (15) medicolegal considerations. The volume is indexed, printed on good paper, and easily handled and read.

By and large, this book is long overdue. Because of the multiplicity of agents being used in practice throughout the country, the possibility of accidents has increased many times over what might have been expected a few years ago. When few agents were available, not too much skill was needed to master their use. With the growing number of agents for local and general anesthesia, the skill required for their use has increased in a geometric ratio. Many of the medicolegal cases of today are due to a lack of caution in the use of these agents and techniques. This book is extremely valuable in avoiding such situations and also in defending one's self in the event of legal action regarding use of anesthetic agents. The author has condensed and interpreted much of the literature concerning anesthetic accidents. The book should be required reading for those who give anesthetics. Many of the questions on qualifying examinations could be composed from its contents.

JOHN S. LUNDY, M.D.
Chicago

DIAGNOSIS AND MANAGEMENT OF PAIN SYNDROMES, edited by Bernard E. Finneson, M.D., 1962. Philadelphia, W. B. Saunders Co., 261 pages. $8.50.

The author's object is stated in the preface where he says, "This monograph is an attempt to provide a practical and useful guide to the management of the pain problems commonly encountered in practice." Most of the techniques described are widely accepted, and no claim is made for original methods or new concepts.

The 11 chapters cover, respectively: (1) pain and its effects; (2) principles of treatment; (3) headache; (4) facial pain; (5) neck pain and cervicobrachial neuralgia; (6) low back pain and sciatica; (7) visceral pain of the chest and abdomen; (8) pain of peripheral vascular disease; (9) reflex dystrophies; (10) nerve compression syndromes, painful scars, and postherpetic neuralgia; and (11) intractable pain and cancer. The book also contains a useful index.

For those who are concerned with the diagnosis and management of pain syndromes, this book is invaluable. The author writes with caution, emphasizing the importance of the fact that if the problem of pain is to be attacked specifically, treatment must not be overdone.

JOHN S. LUNDY, M.D.
Chicago

W. A. Fansler, M.D.

CHARLES A. NEUMEISTER, M.D.
Minneapolis

The entire medical community of Minneapolis was shocked by the untimely death of Dr. W. A. Fansler on May 30, 1963. Dr. Fansler succumbed to a myocardial infarction with no previous illness.

Dr. Fansler was born in Prairie Hill, Mo., on October 28, 1889. He was the only son of Dr. Walter Davis Fansler and the former Emma Dunning Trumbo, a country school teacher.

He was graduated from high school at Sedalia, Mo., in 1907. In 1911, he received a bachelor's degree at the University of Missouri, and a master's degree in pathology in 1912. His medical education was completed at Johns Hopkins University in 1914. While at Johns Hopkins University, he helped organize the Alpha Omicron Chapter of Phi Beta Pi and served as first archon of the chapter. He maintained his interest in fraternity affairs throughout his entire life and was elected Phi Beta Pi Man of the Year in 1957.

Upon completion of his medical education, Dr. Fansler served as an instructor in pathology at Marquette University for one year. He then came to Minneapolis and became associated with Dr. Fred Dunsmoor in the practice of surgery.

In 1916 he began to limit his practice to proctology and did as much or more to establish the specialty as an ethical branch of medicine than anyone in the country. Dr. Fansler established the first clinic in proctology at the University of Minnesota and at the Minneapolis General Hospital and served as the head of the department until his retirement from the faculty in 1958. He was Clinical Emeritus Professor of Surgery at the time of his death.

Dr. Fansler's interest and influence in the specialty of colon and rectal surgery was not only national but international as well. He became a member of the American Proctologic Society in 1919 and was actively engaged in the affairs of the organization until his death. He was twice elected president—first in 1929 and again in 1960. He was one of the founders of the American Board of Proctology which is now incorporated as the American Board of Colon and Rectal Surgery. He served as president of this board in 1954. Dr. Fansler was a Fellow of the American College of Surgeons and a member of the board of governors of the College, representing the specialty of colon and rectal surgery.

During his many years of enthusiastic interest in proctology, Dr. Fansler was much in demand as a speaker. Honorary fellowships in the Royal College of Physicians; the Mexican Proctologic Society; the Chilean Proctologic Society; the New England Proctologic Society; the Philadelphia Proctologic Society; and the New York Society of Colon and Rectal Surgeons are evidence of the respect of his colleagues.

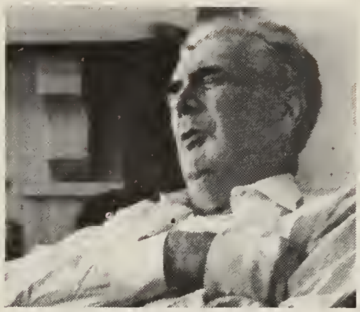
With so consuming an interest in his chosen specialty and the many responsibilities associated with it, Dr. Fansler still found time for such things as the symphony, plays, the opera, and an occasional hunting trip to Saskatchewan.

Dr. Fansler is survived by his wife, Marion, 1 son and daughter, 6 grandchildren, and 1 great grandchild. His friends and associates knew him as Jack. His passing leaves an empty feeling in the hearts of all who knew him. He not only was a doctor to his patients but a friend as well.

CHARLES A. NEUMEISTER *is clinical associate professor of the Division of Proctology, University of Minnesota Medical School.*

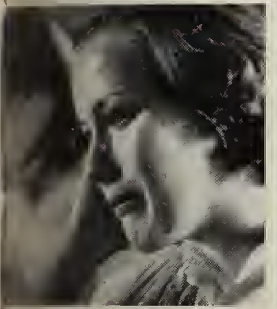
The insomniac

The tense, nervous patient



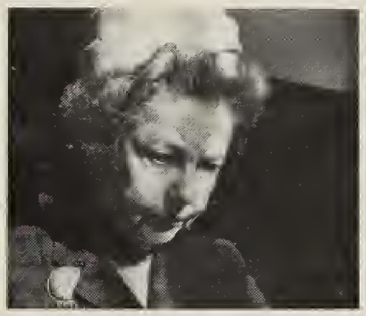
The heart-disease patient

The surgical patient

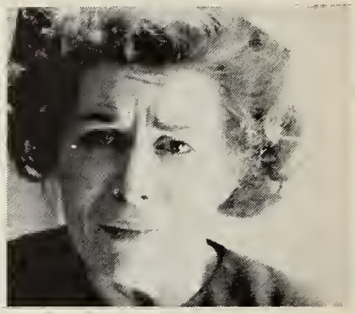


e girl with dermatosis

Tension headache



The woman in menopause



Anxious depression

Premenstrual tension

The agitated senile patient

The alcoholic

The problem child

the original brand of
meprobamate

Miltown®

WALLACE LABORATORIES
Cranbury, N.J.

The G.I. patient

Book Reviews . . .

The Practice of Country Radiology

DONALD DE FOREST BAUER, M.D., *1963. Springfield, Illinois: Charles C Thomas. 260 pages. Illustrated. $11.75.*

Although primarily designed for the country radiologist, this book should be read by every radiological resident in his senior year of residency, regardless of his ultimate potential big city practice. Many of the problems encountered by the radiologist with referring physicians and hospital staff are not unique with small communities, and the author's recommendations for their solution are sound and practicable. Dr. Bauer's slightly pessimistic attitude toward the interrelationships of hospital boards, administrators, staff, and referring physicians is a healthy introduction to the realities involved in actual practice.

While many radiologists are taught their professional skills adequately, the administrative techniques necessary to set up either an independent practice or a radiology department in a hospital are acquired "the hard way." This book, however, deals in detail with the many facets of administrative techniques. After a brief review of the relation of radiology to medical practice, ethics, and a philosophy of service, the author begins a detailed description of record keeping, efficient work routines, financial accounting, hiring and supervision of employees, technical efficiency, writing of reports, radiology in nursing, as well as many miscellaneous details unrelated to specific routines. The book is sparsely, but well-illustrated.

Excellent solutions are offered for the many everyday problems as well as those surrounding the organization and establishment of a radiological department in a small hospital. The author's approach is at once that of common sense and practicality, not unmixed with dry humor and great sensitivity.

This book should be recommended reading for all young radiologists not only for its practical advice but because of the infusion of service with which it is permeated: its author believes the radiologist can maintain his identity only if he realizes his role is ancillary and that his "greatest rewards will be derived from . . . true service to others."

H. M. BERG, M.D.
Bismarck, North Dakota

Sexual Responsibility in Marriage

MAXINE DAVIS, *1963. New York: Dial Press. 380 pages. $7.50.*

As is true with all of Mrs. Davis' books, this is well-written, decidedly interesting, and based on a tremendous amount of research. It is an excellent book for every woman who would like to know, first, about the construction of her sexual organs and, second, about their functions. Following that, there are excellent discussions of such subjects as sexual love and marriage, early sex education, masturbation, modern courtship, preparations for marriage, the premarital examination, the honeymoon, the stimulation of sexual desire, the orgasm, family planning, sexual inadequacy in women, the facts about frigidity, sexual inadequacy and impotence in men, infertility, infidelity, adultery, and venereal disease.

Mrs. Davis maintains so wisely that sex is to be enjoyed and not to be looked on as sinful, or "dirty," or a necessary evil, or only for purposes of procreation. She is in favor of studying the art of loving in all its details in order that sex be enjoyed as much as possible. Very sensibly she feels that anything that makes a loving couple happy is good.

She writes frankly and honestly and gives detailed information in simple, interesting, and readable English. How wonderful it would be if all of our people could have the urbanity, the scientific knowledge, the open-mindedness, and the lack of prissiness and of Mid-Victorian horror over sex that Mrs. Davis has.

WALTER C. ALVAREZ, M.D.
Chicago

Textbook of Psychiatry for Medical Practice

CHARLES K. HOFLING, M.D., *1963. Philadelphia: J. B. Lippincott Co. 558 pages. $9.00.*

The thoughtful physician, these days, knows that emotions complicate the diseases of a large proportion of his patients and hinder his therapies. When he seeks to improve his understanding of those complications and his skills in managing them, however, he is often frustrated. True, postgraduate courses in psychiatry are becoming better and more available, but geographic distances, shortages of time, or other obstacles still prevent too many a doctor from attending them. He must, therefore, depend on book and journal to develop and maintain his psychiatric knowledge.

The book or the journal article, however, may be (1) exhortatory but uninformative, (2) incomprehensibly esoteric, or (3) oversimplified, overgeneralized, and trite. Among the many current books and journal articles devoted to emotional aspects of medical practice, few give him hard-hitting, meaty, and up-to-date psychiatric information which he can readily add to his array of medical skills.

No such thin and outdated tome is *Textbook of Psychiatry for Medical Practice.* It contains psychiatry's latest discoveries and convictions; its extent and detail justify its comprehensive title. Most significantly, author Hofling conveys both intellectual and emotional understanding of the mentally disturbed patient: When he discusses them, "crazy" people seem less mentally disturbed, less baffling, less repellent; they seem to be the proper objects of skilled medical compassion that they are. He has insights, does Hofling, and happily he can pass those insights on to the rest of us.

His understanding of both his patient and his physician-reader leads us surely through ideas of the etiology of psychiatric illness, of its nature and function, its implications, and its treatment. Occasionally, let it be said, the book preaches (or at least espouses) some psychodynamic tenets which most physicians will scarcely accept. Some psychiatrists with experience teaching non-

(Continued on page 18A)

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(Continued from page 16A)

psychiatrist physicians may also predict that this book's frequent concern with the unconscious conflicts within us will push the physician-reader to excessive introspection, thus generating anxiety which will, in turn, generate the defensive rejection both of this book and of psychiatry.

Despite these possible dangers, the teacher of postgraduate courses in psychiatry for practicing physicians may well consider using this book as text or as reference, although the medical school faculty may find it rather less understandable to unripe undergraduate medical students. The physician who lives far from centers of formal psychiatric instruction should find in it relieving insight into those difficult patients who not only make him personally uncomfortable but who also unaccountably fail to respond to his usually successful therapies. He will find many interesting and useful things to discuss informally with his psychiatric consultants.

The book is well-organized, logically developed, readable, and clear. It will contribute to the burgeoning movement to expand the psychiatric skills of the practicing physician.

WILLIAM F. SHEELEY, M.D.
Washington, D. C.

Hypothalamic Control of the Anterior Pituitary: An experimental-morphological study

J. SZANTAGOTHAI, B. FLERKO, B. MESS, *and* B. HALASZ, *1962. Budapest: Publishing House of the Hungarian Academy of Sciences. 330 pages. Illustrated.*

This book is mainly a summary of the work done by the authors over a period of ten years in the Department of Anatomy of the Medical School of the University of Pécs (Hungary), on the problem of the hypothalamic control of the anterior pituitary.

This work attempts to analyze endocrine mechanism chiefly from the viewpoint of feedback control using, in addition to more classical approaches, some new method like the intrahypothalamic and intrahypophysial transplantations of endocrine tissues and the karyometric methods.

About a third of the book is devoted to a careful and detailed anatomical study of the rat hypothalamus. The anatomical description is illustrated with excellent drawings, microphotographs, and beautiful color plates. In addition to the contribution by the authors, complete and critical reference is made of the older literature. In example, in the description of the mammillary region, the authors write, "The mammillary region has been described so perfectly in all details by Cajal, that we cannot add anything of importance in this masterpiece of Golgi analysis." This is not only a tribute to the work of the famous Spanish neurologist but a tribute to the scientific honesty of the authors.

The data presented by the authors indicate that the maintenance of the orderly function and the histological structure of the anterior hypophysis depends on its immediate connection with certain restricted regions of the hypothalamus. The authors have been able to define the hypothalamic region essential for the maintenance of the structure and function of the anterior pituitary. This region is not confined to any known cytoarchitectonic division or to the site of the capillary loops of the median eminence. This finding is interpreted as indicating that the substance transmitted from the hypothalamus to the pituitary anterior lobe is not a "synaptic" mediator in the true sense of the word; it is considered as a product of neurosecretion. The system responsible for the production of this substance is formed by small cells, for the most part situated in the arcuate and the ventral part of the anterior periventricular nucleus, and to some extent by the median cells of the retrochiasmatic area.

No unequivocal evidence of a direct repercussion of target gland hormones on the hypothalamus has been found by the authors with the exception of the well-established direct feedback of the estrogens. On the other hand, evidence is presented which shows that the hypothalamic cells respond to nervous influences reaching the hypothalamus from the target gland, particularly in the case of the adrenal. The size of the cell nuclei of the ventromedial nucleus is enlarged if the adrenal is removed and decreases when the adrenal is made hypertrophic. Crucial evidence as to the neural nature of this phenomenon is given by experiments of unilateral adrenalectomy. The cell nuclei are enlarged in the contralateral side to the extirpated adrenal and decreased in size in the contralateral side of the hypertrophied remaining gland. The authors assume therefore that nervous information from the gland, probably from the very rich capsular receptors, must reach fairly directly the contralateral ventromedial nucleus.

These observations indicate that in addition to the hormonal feed-back mechanism a pure neural feed-back loop must exist.

This monograph is obviously of great interest to the endocrinologist and the neurologist and will prove stimulating reading for everyone interested in experimental medicine. The authors deserve to be complimented for the high quality of their work and for the excellent presentation of the book.

FRANCISCO GRANDE, M.D.
Minneapolis

Normal Growth and Cancer

GRACE MEDES, PH.D., *and* STANLEY P. REIMANN, M.D., *1963. Philadelphia: J. B. Lippincott Co. 268 pages. Illustrated. $8.00.*

This clearly written little book includes brief descriptions of many aspects of growth phenomena. It is a pleasure to read a "personal" book in contrast to a publication of the currently fashionable kind, which consists of multiple chapters by individual authors bound together and labeled a "book." Of course, there are minor flaws, and some major aspects of cancer and growth are slighted, but such deficiencies do not detract from the book's charm or even from its value to high school teachers, college student, and graduate students, especially those in the adjuvant medical fields such as nursing. The style is interesting, and the material is factual and up-to-date.

I would also recommend the book as a reference to those who must prepare review lectures on the present status of cancer research. Busy practicing physicians who wish brief explanations of some of the increasingly complex areas of biological research will find it a bridge from their earlier schooling to a comprehension of such terms as "inducers," "prophage," and "nucleotide codes."

The illustrations and charts are excellent. Additional diagrams and flow patterns would have been valuable teaching aids for the audience to which the book is directed.

GEORGE E. MOORE, M.D.
Buffalo, New York

News Briefs . . .

North Dakota

DR. JOHN F. JOHANSON of Cavalier has moved to Bellevue, Washington. He began practice in Cavalier in 1953, was vice-president of the North East District Medical Society, and at one time was head of the county board of health.

* * * *

DR. THEODORE A. HARRIS has joined the staff of the State Hospital at Jamestown after completing a three-year residency in psychiatry at the Nebraska Psychiatric Institute, Omaha. Dr. Harris received his medical degree from the University of Manitoba Faculty of Medicine, Winnipeg.

* * * *

DR. PAUL V. VANDERSTEEN, a 1962 graduate of the University of Minnesota Medical School, has entered the United States Public Health Service and has been assigned to the Public Health Service Indian Hospital in Fort Yates. He recently completed internship at Minneapolis General Hospital.

* * * *

DR. GERALD T. SAILER of the Public Health Service Indian Hospital, Belcourt, has been appointed medical officer in charge. The hospital serves approximately 6,000 members of the Turtle Mountain Chippewa Indian tribe in Rolette County.

DRS. ROBERT D. CARLSON AND FRANCIS M. BROWN have been assigned by the Public Health Service to the Public Health Service Indian Hospital, Belcourt. Dr. Carlson received his medical degree from Temple University School of Medicine, Philadelphia. He completed internship this year at Marion County General Hospital, Indianapolis. Dr. Brown was graduated from Emory University School of Medicine, Atlanta, in 1962, and interned at the Public Health Service Hospital, Staten Island, New York.

* * * *

DR. JOHN STEPHEN COLDIRON, commissioned in the U.S. Public Health Service in April, has been assigned to the Public Health Service Indian Hospital, Belcourt. Dr. Coldiron is a 1962 graduate of the University of Chicago School of Medicine. He interned at the Robert Packer Hospital in Sayre, Pennsylvania, where he received the "intern of the year" award.

* * * *

DR. ROGER D. ENGBERG has returned to the DePuy-Sorkness Clinic in Jamestown after a three-year residency in orthopedic surgery. Two years of his training were spent at the Veterans Administration Hospital in Portland, Oregon, and one year at the Shriners Hospital for Crippled Children in Spokane, Washington. The clinic also

(Continued on page 22A)

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1 Puritan O_2 Regulator
1 Continental Air O_2 Regulator
3 Ohio Chemical O_2 Regulators
1 SKLAR Tompkins Rotary Compressor Suction Type T Portable
2 Gomco Birdcage Suction
1 Gomco Portable Alternating Suction with Stand
1 Continental Air O_2 Machine, Model H-D, Seril 2000
1 Heidbrinks Kiet-o-meter Gas Machine with Bags
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1 Scanlon-Morris Cylindrical Autoclave, Electric, 16-24
1 Heidbrink O_2 Machine, Model 25
1 Wolf X-Ray Viewer, wall model
1 Bendick EKG Machine with jack for phonotrace connection
1 Jewett Blood Bank
1 Bovie Electrosurgical Unit, Model AG

NEWS BRIEFS

(Continued from page 21A)

announces the association of Dr. R. G. Brasseur. A general practitioner, Dr. Brasseur received his medical degree from the University of Washington School of Medicine, Seattle, in 1962. He completed his internship this year at St. Luke's Hospital, Spokane.

* * * *

DRS. JUANITO A. CRISOLOGO AND JAVIER LOPEZ are now staff surgeons at the Veterans Administration Center, Fargo. Dr. Crisologo was previously in private practice at Clintwood, Virginia, and Dr. Lopez recently completed four years of residency training at St. Alexis Hospital, Cleveland.

* * * *

DR. DONALD L. LAMB has established a practice in plastic and reconstructive surgery in Fargo. He has had a fellowship in plastic surgery since 1961 at the University of Pittsburgh School of Medicine. Dr. Lamb is a diplomate of the American Board of Surgery.

* * * *

DR. C. A. HAMILTON, cardiologist at the Quain and Ramstad Clinic in Bismarck, has been given a research grant for 1963-64 by the North Dakota Heart Association. Dr. Hamilton is a fellow of the American College of Physicians and a diplomate of the American Board of Internal Medicine. He also is a member of the American Heart Association and New York Academy of Science.

* * * *

DR. JAMES OLIVER, former Moorhead physician, has been named head of the department of urology at the Dakota Clinic, Fargo. He has completed a three-year urologic residency at the University of Minnesota Medical School and Veterans Administration Hospital, Minneapolis, fulfilling training requirements of the American Board of Urology.

* * * *

DR. DAVID G. MUSGJERD, a general practitioner who completed internship this year at Ancker Hospital, St. Paul, Minnesota, is affiliated with the Craven-Hagan Clinic, Williston. He received his medical training at the University of North Dakota School of Medicine and the University of Maryland School of Medicine, Baltimore, where he was graduated in 1962. Dr. Musgjerd expects to be called into the U.S. Air Force early next year for two years' service.

* * * *

DR. STANLEY W. KECK has joined Dr. George M. Hart in the practice of orthopedic surgery at the Northwest Clinic, Minot. He recently completed a four-year fellowship in orthopedic surgery at the Mayo Clinic, Rochester, Minnesota. Dr. Keck is a graduate of Northwestern University Medical School, Chicago. He was a member of the Northwest Clinic staff before serving as a medical officer in the U.S. Navy.

* * * *

DR. H. C. KRAHN of Walhalla, has succeeded Dr. John Johanson of Cavalier as county health officer for 1963-64. Dr. Johanson is moving to Washington.

* * * *

DR. DONALD J. SCHMIDT, physician at Gackle for the past three years, has moved to Bismarck where he has a residency in radiology. He has served the Gackle Health Center since 1960.

* * * *

DR. THEODORE R. MABINI has become pathologist and director of laboratories at Good Samaritan and Mercy hospitals in Williston. Dr. Mabini is a native of Manila in the Philippine Islands. He studied anatomical and clinical pathology at Mount Sinai Hospital, Cleveland. His experience includes two years as lecturer in pathology at Queens University, Kingston, Ontario, director of autopsy service at Kingston General Hospital, and a year as director of Laboratories of Eastern Kentucky.

Minnesota

DR. FRANK H. KRUSEN, former executive director of the Sister Elizabeth Kenny Foundation and director of the Kenny Rehabilitation Institute, has accepted a post as head of the physical medicine and rehabilitation program at Temple University Medical Center, Philadelphia. He will also serve as coordinator of physical medicine and rehabilitation for hospitals affiliated with the Medical Center. Dr. Krusen resigned from his positions with the Kenny organization in July and retired from his post as senior consultant of the Mayo Clinic's section of Physical Medicine and Rehabilitation in June. He will continue as president of the American Rehabilitation Foundation, a subsidiary of the Kenny Foundation made up of leaders in the field of rehabilitation.

° ° ° °

THE MINNESOTA HEART ASSOCIATION and the American Heart Association are jointly sponsoring a group to be known as "Friends of E. V. Allen" to solicit and administer a predoctoral medical scholarship fund at the Mayo Clinic and Mayo Foundation in memory of Dr. Edgar Van Nuys Allen, former president of the American Heart Association and longtime consultant in the Peripheral Vascular section of the Clinic. Proceeds of the solicitation will go to underwriting three months of study in cardiovascular and related fields at the Clinic and Foundation for students throughout the United States. Information can be obtained from the Minnesota Heart Association, 1821 University Avenue, St. Paul 55104.

° ° ° °

DRS. LOIS ANSELMENT AND GREGORY L. SEIFERT have joined the Seifert Clinic in Excelsior. Dr. Anselment is a graduate of the University of Minnesota Medical School and Dr. Seifert of the St. Louis University School of Medicine, Missouri. Both recently completed internships at St. Mary's Hospital, Minneapolis.

° ° ° °

DR. TOM HEGSTAD has begun practice with Drs. Homer and Harold Basinger in Windom. Dr. Hegstad is a 1962 graduate of the University of Minnesota Medical School. He interned at St. Mary's Hospital in Minneapolis.

° ° ° °

DR. GEORGE A. COLE, a native of New York City, has joined the Albert Lea Clinic as an internist. Dr. Cole was associated with the Dartmouth Medical School hospitals from 1958 to 1961. He recently completed two years of service in the Air Force.

° ° ° °

DR. HAROLD L. MASON, head of the Mayo Clinic Section of Biochemistry, was installed as president of the American Endocrine Society at the annual meeting in Atlantic City in June. Dr. Mason has been with the Clinic since 1928.

(Continued on page 24A)

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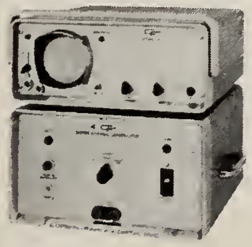

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NEWS BRIEFS

(Continued from page 23A)

DR. DEAN CLARKE, a recent graduate of the University of Michigan Medical School, Ann Arbor, has begun practice with the Faribault Medical Center. He interned at Sioux Valley Hospital, Sioux Falls, South Dakota.

° ° ° °

DR. ROGER A. BUSH, a native of Kearney, Nebraska, has joined the Owatonna Clinic in the practice of general medicine and obstetrics. Dr. Bush was graduated from the State University of Iowa College of Medicine in 1962 and completed his internship at Wesley Hospital, Wichita, Kansas.

° ° ° °

DR. DAVID DRILL has become a member of the Drill Clinic, Hopkins, founded by Dr. H. E. Drill, his father. He was graduated from the University of Minnesota Medical School, interned at Minneapolis General Hospital, and was a resident at General Hospital in internal medicine for the past three years.

° ° ° °

DR. FREDERICK OWENS, JR., of Mendota Heights has been installed as president of the Minnesota Surgical Society, with Dr. W. H. Re Mine, Jr., of Rochester as vice-president. Dr. Josiah Fuller, Duluth, is president-elect.

° ° ° °

DR. GEORGE F. WAGONER has become a member of the department of obstetrics and gynecology at the Lenont-Peterson Clinic in Virginia. He recently completed a three-year residency in his specialty, at Grace Hospital, Detroit.

° ° ° °

DR. GERALD E. COTTON has moved to Fosston to practice at the Roholt Clinic. He is a graduate of Marquette University School of Medicine, Milwaukee, and served his internship at St. Mary's Hospital, Duluth.

° ° ° °

DR. RAYMOND J. JACKMAN, head of the Mayo Clinic Section of Proctology, has been appointed president of the Minnesota State Board of Health. He has been a member of the Board since 1961 and replaces Dr. Frank H. Krusen, emeritus Mayo Clinic staff member, who has accepted a position at Temple University Medical Center, Philadelphia.

° ° ° °

DR. HARPER F. WILLIS is the Medical Director at the Western Mental Health Center, Marshall. Dr. Willis was a resident in psychiatry and neurology at the University of Minnesota during 1958-1961 and then joined the staffs of the department of physical medicine and rehabilitation and of the department of psychiatry. He also will be a member of the staff of the Louis Weiner Memorial Hospital in Marshall.

° ° ° °

DR. JOHN E. SUTHERLAND has joined the staff of the Louis Weiner Memorial Hospital in Marshall. Dr. Sutherland was graduated from the University of Minnesota Medical School and interned at Bethesda Hospital, St. Paul.

° ° ° °

DR. DONALD MAUS, a graduate of the University of Minnesota Medical School who recently interned at St. Luke's Hospital, Duluth, has begun practice in Monticello at the Hart Hospital with Drs. Matthew Smorstok and W. E. Hart.

° ° ° °

DR. JOHN SALCHERT has begun practice in Minneapolis as an associate of the Northeast Medical Clinic Professional Association. Dr. Salchert is a graduate of the University of Minnesota Medical School and completed internship at St. Mary's Hospital, Minneapolis.

° ° ° °

DR. LEONARD H. BLACKWELL has joined the Glencoe Medical Clinic. He was a general practitioner for eight years and then entered residency training in general surgery at St. Boniface Hospital, Winnipeg. He completed residency requirements at the Veterans Administration Hospital, Iowa City.

° ° ° °

DRS. GARY GLOMSTAD AND ALBERT ROTH, both graduates of the University of Minnesota Medical School, have begun practice at the Deer River Community Memorial Hospital. Both doctors interned at Bethesda Hospital, St. Paul.

° ° ° °

DR. KARL J. OLSEN, a member of the Mayo Clinic Section of Physical Medicine and Rehabilitation since 1960, has resigned. He formerly was a member of the staff of the Columbus General Depot, Oxford, Ohio, and of the Children's Hospital and Ohio State University Hospital, Columbus.

° ° ° °

DR. WILLIAM P. MILLER of the Chippewa Clinic in Montevideo has moved to Minneapolis to practice. He has served as president of the Camp Release District Medical Society, as medical adviser to the Montevideo Rehabilitation Center, and as adviser to the Chippewa County public health nursing board.

FIVE DOCTORS have been assigned to the Public Health Service Indian hospitals at Red Lake and Cass Lake. Assigned to the Red Lake hospital are Drs. Frank R. Bowers, Richard A. Bell, and Thomas A. Smith. Drs. Bowers and Bell are graduates of Ohio State University College of Medicine, Columbus. Dr. Bowers interned at Mercy Hospital, Springfield, Ohio, and Dr. Bell at Minneapolis General Hospital. Dr. Smith was graduated from the University of Michigan Medical School, Ann Arbor, and interned at the United States Public Health Service Hospital in San Francisco. Going to the Cass Lake hospital are Drs. Ronald D. Brown and Stanley W. Boyer. Dr. Brown is a graduate of Temple University School of Medicine, Philadelphia. He interned at the Charles T. Miller Hospital, St. Paul, as did Dr. Boyer, who was graduated from Indiana University School of Medicine.

° ° ° °

DR. BEMIS M. JOHNSTON, a native of Grand Junction, Colorado, has joined the staff of the Litchfield Clinic. Dr. Johnston was graduated from the University of Utah College of Medicine in 1962 and completed internship this year at St. Luke's Hospital, Duluth.

° ° ° °

DR. PAUL H. HEDENSTROM has joined the Medical Center in Little Falls. He recently completed a four and one-half year training program in surgery at the University of Minnesota, Minneapolis, and Ancker Hospital, St. Paul. Before that, he practiced general medicine at Cambridge for four years.

° ° ° °

DR. O. E. WIGER, a University of Texas Southwestern Medical School graduate, has entered practice with Dr.

(Continued on page 26A)

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NEWS BRIEFS

(Continued from page 25A)

D. R. Seifert at the Broadway Clinic, Little Falls. Dr. Wiger recently finished internship at St. Luke's Hospital, Duluth.

South Dakota

DRS. GERALD E. SCHNEIDER AND MAURICE A. WATTS have became staff psychiatrists at the Veterans Administration Hospital in Fort Meade. Dr. Schneider has been a member of the staff at the Veterans Administration Hospital, Perry Point, Maryland, since 1960. Dr. Watts has had a residency at the Veterans Administration Hospital in Topeka since 1960.

* * * *

DR. CLAYTON H. MC CRACKEN, JR., of Asheville, North Carolina, has been assigned to the U.S. Public Health Service Indian Hospital in Pine Ridge. He is a graduate of Duke University School of Medicine and was commissioned in the U.S. Public Health Service in 1959.

* * * *

DR. SHIRLEY A. CLAASSEN, pediatrician, has joined Dr. R. H. Hayes in Winner. She spent one year in residency at Bernalille County Indian Hospital, Albuquerque, and a second year at the University of Nebraska Hospital, Omaha.

* * * *

DR. DAVID G. SMITH has begun practice at the U.S. Public Health Service Indian Health Center in Sioux Falls. He completed internship at Santa Clara County Hospital, San Jose, Calif., this year. Dr. Lawrence Penning, formerly in charge, plans to take advanced study in pathology at Detroit.

* * * *

DR. RAYMOND J. DES ROSIERS has joined Dr. Joseph Hamm in practice at Sturgis. During the past two years, Dr. DesRosiers has been at the U.S. Public Health Service Indian Hospital at Eagle Butte, South Dakota.

Deaths . . .

DR. PETER J. WEYRENS, 90, general practitioner in Hebron, North Dakota, for more than thirty years, died July 31 in Oakes after a two-week illness. Born near Cold Spring, Minnesota, Dr. Weyrens began his medical career in Ivanhoe and Red Wing. He moved to Sheldon, North Dakota, in 1910 and remained until 1926, when he moved to Akeley, Minnesota. After two years of practice in Akeley, he moved to Hebron, where he practiced until his recent retirement. Dr. Weyrens was graduated from the University of Minnesota Medical School in 1900. He taught school for five years before beginning the study of medicine.

* * * *

DR. ALBERT E. BOOTH, 91, retired surgeon in Golden Valley, Minnesota, died July 29. He was graduated from the University of Minnesota Medical School in 1899 and was an early member of the American College of Surgeons. Dr. Booth was chief of a surgical section at Minneapolis General Hospital in the mid 1920s and chief of staff at St. Barnabas Hospital, Minneapolis, in the early 1930s. He retired from active practice in 1947.

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The editors of THE JOURNAL-LANCET will dedicate the December issue to the memory of Walter L. Bierring, "a true giant of American medicine."

Slightly more than two years have elapsed since Dr. Bierring passed on. In the words of Gaylord W. Anderson, professor and director of the School of Public Health, University of Minnesota, guest editor of this issue, the spiritual Dr. Bierring will live on "long after those of us who knew and worked with him are forgotten." His work will continue to contribute to the enrichment of human life, and will still personify the highest ideals of medicine and public health, says Dr. Anderson.

The biography of Walter L. Bierring remains to be written. This will be a biography of leadership, of vision, of youth in old age, of compassion, and of spiritual as well as intellectual and political leadership.

For the present, Dr. Anderson has brought together a group of papers written by friends and colleagues of Dr. Bierring. These papers serve to cast an interim spotlight on the works of this American leader of medicine.

Included in this special issue will be the following:

- **Walter Lawrence Bierring, M.D., M.A.C.P., Hon. M.R.C.P., Edin., 1868-1961,** by Lee Forest Hill, Des Moines.

- **Walter L. Bierring, M.D.: An Appreciation,** by William B. Bean, Iowa City.

- **Recollections in the Life of Walter L. Bierring, M.D.,** by F. J. L. Blasingame, Chicago.

- **Walter L. Bierring, M.D., and The American Board of Internal Medicine,** by William S. Middleton, Oklahoma City.

- **Walter L. Bierring, M.D., and The National Board of Medical Examiners,** by John P. Hubbard, Philadelphia.

- **Walter L. Bierring, M.D., and The American Board of Preventive Medicine,** by Ernest L. Stebbins, Baltimore.

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Quain and Ramstad Clinic Series

Vulvovaginitis in Children

ROBERT B. TUDOR, M.D.
Bismarck

VULVOVAGINITIS is common in children, whose vaginal mucosae are thin owing to lack of ovarian estrogenic secretion. The vagina behaves differently at different ages. In the newborn period, the reaction is strongly acid; shortly thereafter, Döderlein's bacilli disappear, glycogen is not found, and the alkaline environment is occupied by mixed organisms. With puberty, glycogen, Döderlein's bacilli, lactic acid, and an acid pH reappear under the influence of estrogens. The child's vagina is an ideal culture medium for bacteria. Almost all children's vaginas are inflamed to some degree.

In a child, vulvovaginitis may be caused by pinworms, foreign bodies, Trichomonas vaginalis, Neisseria gonorrhoeae, Escherichia coli, hemolytic streptococci, viridans streptococci, coagulase-positive hemolytic staphylococci, pneumococci, the viruses of varicella, herpes simplex and measles, Hemophilus influenzae and Monilia.

In my practice, I have not seen examples of infection secondary to foreign body, gonorrhea, Hemophilus influenzae or viral disease (see table 1). Sixty-two children were seen with vulvovaginitis (see figure 1). One case occurred during the course of a severe erythema multiforme. After the child's own estrogenic hormone appears, infection with Candida albicans is commoner. Twenty-one cases of Trichomonas infection were encountered (see figure 2).

The child with a vulvovaginal infection may have a nonsymptomatic colored discharge or one that itches and is foul smelling. A history and general physical examination should first be done. A swab is then taken from the anus and examined for pinworms. The rectum should be

TABLE 1
ETIOLOGY, 62 CASES OF CHILDHOOD VULVOVAGINITIS

Pinworms	1
Trichomonas	21
Escherichia coli pseudomonas	15
Beta hemolytic streptococcus	12
Coagulase-positive hemolytic staphylococci aureus	8
Candida	2
Streptococci viridans	5
D. pneumoniae	2
Nonhemolytic staphylococci	1
Erythema multiforme	1

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TABLE 2
TREATMENT RECOMMENDED FOR CHILDHOOD VULVOVAGINITIS

Pinworms: Piperazine syrup—7 to 10 days

Gonorrhea: Penicillin—1 large dose

Candida: Aqueous gentian violet—nystatin suppository

Trichomonas: Stilbestrol suppository—7 days

Beta hemolytic streptococci: Penicillin or erythromycin orally or parenterally

Coagulase-positive staphylococci: Penicillin or erythromycin orally or parenterally; Neo-polycin ointment locally

Mixed infections, atrophic vaginitis: Stilbestrol suppository—7 days

Escherichia coli: Terramycin or Aureomycin orally; stilbestrol suppository—7 days

examined, and the child's vulvovaginal area milked to express any secretion. It is not usually necessary to examine the vagina either digitally or with a speculum. A sterile "Q" tip, moistened with saline, may be wiped over the vulvar area and inserted into the vagina without much trauma, or secretion may be sucked from the vagina with a sterile glass dropper. Cultures are taken on media which will yield growth from cocci, gram-negative bacilli, and Monilia. A drop of the vaginal secretion is diluted with saline and examined for trichomonads. Most of the differential studies can be done in the office, and treatment may be initiated at once.

Vulvovaginal cleanliness is best achieved in children by having the child carefully wipe the anal area away from the vagina after stooling and take a sitz bath in soapy water at least once a day. The vulvovaginal area may be cleansed with a detergent solution and a soft sponge. The atrophic vaginal mucosa of childhood is prone to harbor infections, so it is almost routine to recommend the use of one-half of an 0.5-mg. diethylstilbestrol vaginal suppository nightly for seven to eight nights, regardless of the etiology of the infection. Enough absorption occurs so that at the end of this period the child's nipples begin to swell and the vulvovaginal area takes on a whitish appearance. (See table 2 for spe-

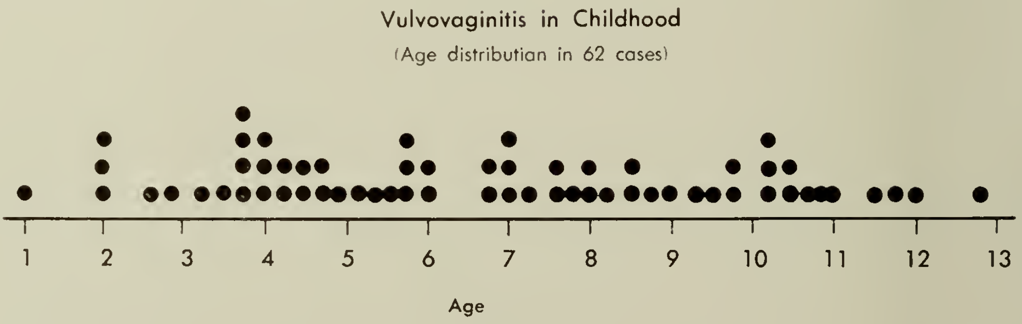

Fig. 1

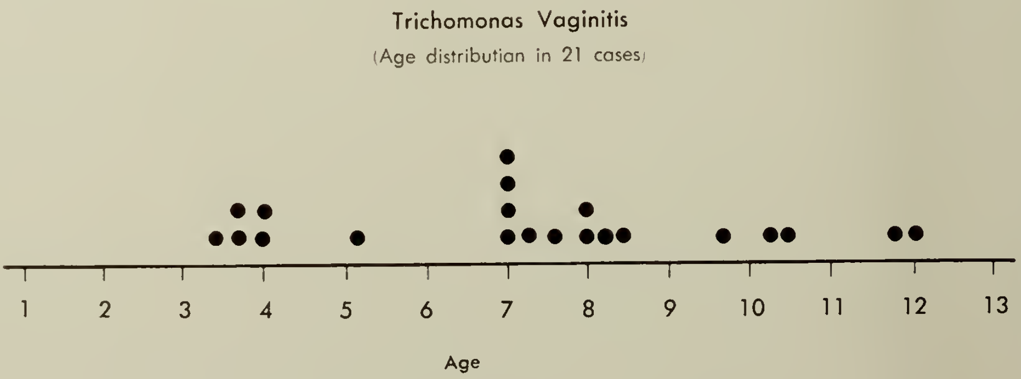

Fig. 2

cific therapeutic recommendations.) When vesicles and impetiginous lesions appear on the vulva during the course of a bacterial infection, I have asked the mother to rub Neo-polycin ointment into these areas with a "Q" tip nightly until they disappear.

Specific adult-type vaginal suppositories have not been successful in curing childhood trichomonas infections in this series. Such infections seem to respond best to stilbestrol vaginal suppositories.

SUMMARY

A study was made of 62 children with vulvovaginitis. This group included 21 infected with Trichomonas vaginalis, 15 with Escherichia coli, 12 with beta hemolytic streptococci, 8 with coagulase-positive staphylococci, and 5 with viridans streptococci.

Methods of diagnosis and treatment were discussed. It is important to recognize the fact that all children have some degree of atrophic vaginitis.

CHOLESTASIS MAY be the primary cause of symptoms in either drug or viral hepatitis, making it difficult to distinguish the disease from extrahepatic biliary obstruction as a cause of jaundice. Surgical risk is not great in drug-induced hepatitis but is high enough in viral hepatitis to warrant avoidance of operation whenever possible. However, laparotomy may be necessary to exclude a tumor or stone when principal symptoms are prolonged deep jaundice and pruritus. Cephalin flocculation tests are often negative, and serum alkaline phosphatase concentration is elevated, as in biliary obstruction. Histological examination of the liver may fail to demonstrate hepatitis, indicating instead a nonspecific cholestasis. Acute hepatitis is a disease of young people and is particularly likely to be overlooked in older patients. Medical history may lack adequate information about exposure to the disease or to drugs, contributing further to difficulty of diagnosis. Of 58 patients with prolonged jaundice, 43 had pruritus and 30 had abdominal pain. Operation revealed no evidence of extrahepatic biliary obstruction, and 42 were found to have viral and 16 drug hepatitis. In the viral group, 4 patients died and 5 had major complications within three weeks of operation; no serious complications occurred in the drug group.

DONALD D. HARVILLE and WILLIAM H. J. SUMMERSKILL: Surgery in acute hepatitis: causes and effects. J. Amer. med. Ass. 184:257-261, 1963.

EMOTIONAL ILLNESS from disturbing events such as surgery, medical illness, childbirth, marital discord, and broken love affairs may lead to urinary retention without organic disease in women. The emotional cause usually is not recognized on initial examination. The patient reports symptoms of suprapubic discomfort, frequency, and dysuria, and often has multiple somatic complaints, including abdominal or low back pain, constipation, and headache. Multiple surgical procedures have been performed in the majority of patients. Treatment of the usually severe emotional distress should be by psychiatrist and urologist jointly. Surgery gives poor results, and postoperative psychological end result may be disastrous. Psychiatric evaluation of 25 women with psychogenic urinary retention resulted in diagnosis of conversion hysteria in 12, neurotic depression in 3, schizophrenia in 5, and psychotic depression in 3.

JAMES W. LARSON, WENDELL M. SWENSON, DAVID C. UTZ, and RICHARD M. STEINHILBER: Psychogenic urinary retention in women. J. Amer. med. Ass. 184:697-700, 1963.

Quain and Ramstad Clinic Series

Technique in Giving Allergen Injections

KENNETH J. JOHNSON, M.D.
Bismarck

SINCE 1911, when Noon[1] found that patients suffering from hay fever showed improvement after they had received a series of graded injections of pollen extract, injections have been used successfully by many physicians in treating allergic rhinitis due to various inhalants.[2] The incidence of reactions to these injections, however, has lessened the enthusiasm of some practitioners.

In studying the circumstances of some of these reactions, the author has concluded that the reactions might have been ameliorated or prevented by altering certain details of technique. In a few instances the error was obvious, as when the nurse gave the allergen injection in the ventral surface of the forearm or when the local reactions were ignored each time the dose was increased until a severe generalized reaction finally occurred. Usually, however, the reason for a reaction may seem obscure.

Basically, whether a reaction occurs depends on the dose of antigen administered and the speed of absorption from the site of injection.

DOSAGE OF ANTIGEN

Excessive dosage can be prevented if the initial dose and each successive increase are small enough. Why not be content with staying at a safe minimum dose? The best response to hyposensitization therapy has been seen in those patients who received the largest total amount of pollen extract.[3] Other factors being equal, if the dose is never increased when it causes a wheal or erythema the size of a quarter or larger, an ample margin of safety will be maintained.[4] It is assumed that volume and dilution are checked, double-checked, and triple-checked each time.

What are the other factors which may change the dosage the patient receives? How can these be remedied? If the patient receives a dose smaller than the physician believes he gave, the next dose may prove to be too great an increase and cause a reaction. There are several possibilities.

Air may be drawn into the chamber of the syringe between plunger and barrel when aspirating the fluid from the bottle. To prevent this, each time before withdrawing the solution, inject a volume of air into the bottle equal to the dosage volume. Also air may seep in between the hub of syringe and needle or solution leak out through this same channel. Be certain the cup of the needle is tight on the hub of the syringe, which must not be chipped.

A deteriorated overage solution is equivalent to a lower dosage and should not be used. A new bottle may have more potent material, so that the same volume is more apt to give a reaction. Dosage from a freshly made extract should be reduced to one-half or one-third.[5]

It is felt that it is better not to inject epinephrine or antihistamine routinely,[6] since if any reaction is to result, it should not be masked. After a few such injections, the overdosages thus masked will finally break through the protection of the epinephrine or antihistamine to cause a severe reaction. Allow the benign slight reactions to warn you of danger to come with further increases in dosage.

SPEED OF ABSORPTION

Too rapid absorption may result from (1) acceleration of circulation of the blood, (2) injection into an area of vascularity, or (3) formation of the injected solution into a shape presenting too great a surface area.

A decreased circulation time is found in hyperthyroidism and anemia.[7] Fever and exercise in-

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crease the rate of circulation and, hence, increase the absorption from the injection site. The first 3 conditions should be corrected before allergen injections; the patient should be cautioned against undue exertion after his injection.

If an injection is too deep, the solution gets into the muscle, if too shallow, into the dermis; both are to be avoided. When an injection is being made the syringe should be held at an angle of 30 degrees with the surface of the skin. A smaller angle causes the extract to be deposited too shallowly in the skin, which burns as well as causes a local erythema and wheal. A larger angle causes the extract to be deposited too deeply, which allows it to be absorbed too rapidly. An occasional individual has unusually thick skin, in which instance the needle must penetrate deeper to avoid the cutaneous wheal and erythema. With a thin patient, stretch the skin, insert the needle, release the skin, and inject. With a fat patient, grasp the skin, insert the needle into the fold of skin held between thumb and fingers, release the skin, and inject. This will prevent the needle's causing a dimpling of the skin, which would mean the needle is too shallow.

The plunger should be pulled back slightly after the needle is inserted through the skin.[8] If blood appears in the barrel of the syringe, a venule has been punctured, which will allow too rapid absorption; the needle should be withdrawn and another site tried. After the needle has penetrated the skin, it should not be moved around—by breaking blood vessels, thusly, reaction from too rapid absorption becomes imminent.

A site should be selected on the outer posterior lower portion of the upper arm where there are few sizable blood vessels[9] and there is room for a tourniquet between the injection site and axilla. To prevent formation of areas of fibrosis and pooling of allergen, injections should be alternated between the two arms[10] and never made in the exact spot of a previous injection.

Even if the needle tip reaches the proper depth, some solution may find its way into the skin through the channel formed by the needle. To avoid this, a dry needle is used. A sterile pledget is used to blot any droplets off the shaft of the needle. Air is aspirated into the bore of the needle to prevent the deposition of any allergen in the needle's path into the skin. As the needle is withdrawn, pressure is put on the site with a sterile pledget and the patient is asked to maintain a steady pressure for five minutes,[11] without rubbing, so the extract does not seep back through the channel to cause burning and an unintended skin test reaction or leak out to result in an inadequate dosage.

If there is no distortion, the solution assumes a spheroid or ovoid shape below the skin,[12] which presents the smallest surface area for optimum slow absorption. If the area of injection is rubbed—a common practice of patient and physician—the solution is distorted into an amoeboid shape, which presents a greatly increased surface area and increases the absorption rate.

Although the patient finds a small volume more comfortable than a large volume, it has been shown that a reaction is more likely with a smaller volume, because of the more rapid absorption.[13]

The patient should carry an antihistamine drug and be encouraged to take a tablet[14] on any suspicion of a reaction.

If swelling or burning occurs, application of cold by ice pack, such as an ice cube or snow wrapped in a handkerchief, on the site of injection will decrease the rate of absorption.

Further procedures, such as application of a tourniquet or injection of epinephrine and antihistamines, are treatment and not prevention and are beyond the scope of this paper.

In conclusion, an allergic reaction may be avoided by being certain that the patient receives the precisely correct dose of allergen entirely in the correct site and that this is absorbed at the correct rate.

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Acute Poisoning from Overdose of Isoniazid

A Case Report

HELEN STARKE, M.D., and STARKS WILLIAMS, M.D.
Kansas City, Missouri

Convulsive seizures that are not amenable to usual anticonvulsant therapy are not common but may occur. Similarly, acute poisoning from overdose of isoniazid is not frequent. Refractory seizures due to acute isoniazid intoxication constitute a medical emergency. Catastrophe could result from the convulsions or from the massive quantity of sedation employed in an effort to control the seizures. We should like to add our observations and considerations to those already reported in the literature.

REPORT OF CASE

History. A 22-month-old Negro boy, weighing 12.3 kg., had been receiving isoniazid (25 mg.) twice daily since November 1962. At that time his father was discovered to have active pulmonary tuberculosis for which he has been undergoing treatment at the Veterans Administration Hospital. The child's sole therapeutic source of vitamin B_6 was Vi-Penta Drops No. 3 (0.6 cc.) daily. This supplies 1 mg. of pyridoxine daily. The child's mother and siblings are living and well. There is no family history of convulsive seizures.

About 4:30 P.M. on February 15, 1963, the child ingested an unknown quantity of isoniazid tablets—estimated at approximately 50 (100 mg.) tablets. As soon as this discovery was made, a close relative administered mustard by mouth and the child vomited. No other fluid, food, or therapy was given. About fifteen minutes later he started to have generalized clonic convulsions. He was taken to the physician's office where phenobarbital sodium (0.128 gm.) was given intramuscularly and sodium amytal (0.064 gm.) was given intravenously. He was then brought to Queen of the World Hospital. He was having continuous convulsions. (There is no history of previous seizures.)

On admission the child appeared well-developed, well-nourished, and normally hydrated. Clonic convulsions continued. Cyanosis was observed.

Laboratory Findings. The hemoglobin concentration was 11.3 gm. per 100 cubic centimeters. Hematocrit reading was 38 per cent. There were 7,000 leukocytes per cubic centimeter. There were 76 per cent polymorphonuclear leukocytes of which 2 per cent were nonfilamented forms, 18 per cent lymphocytes, 4 per cent monocytes, and 2 per cent basophils. Urinalysis revealed a specific gravity of 1.017; no albumin or sugar were present.

Hospital Course. Oxygen with humidity was administered in a croupette. Intravenous fluids (500 cc. of 2½ per cent dextrose in 0.45 per cent sodium chloride solution) containing pyridoxine (100 mg.) were started and sedation was administered intravenously directly through the tubing as follows:

Time	*Drug*	*Dose*
6:40 P.M.	Sodium amytal	0.032 gm.
6:50 P.M.	Sodium amytal	0.032 gm.
6:55 P.M.	Sodium amytal	0.032 gm.
7:00 P.M.	Sodium amytal	0.032 gm.
7:05 P.M.	Sodium amytal	0.032 gm.
7:10 P.M.	Sodium amytal	0.064 gm.
7:30 P.M.	Sodium amytal	0.032 gm.
7:40 P.M.	Sodium amytal	0.032 gm.
	Paraldehyde	2 cc. (intramuscularly)
7:45 P.M.	Sodium amytal	0.032 gm.
8:10 P.M.	Sodium amytal	0.032 gm.
8:20 P.M.	Sodium amytal	0.032 gm.

Throughout this period, convulsions were almost continuous, with two short periods of relative quiescence of about five minutes each from about 7:20 P.M. to 7:25 P.M. and from 7:55 P.M. to 8:00 P.M.

At 8:25 P.M. pyridoxine (100 mg.) was added directly intravenously and within approximately three minutes convulsions ceased. Respirations which had been irregular and labored became regular. The rate remained between 22 and 28 per minute. Slight convulsive movements were noted at 11:40 P.M. for fifteen seconds. Paraldehyde (1 cc.) was given intramuscularly at 12:10 A.M. on February 16, 1963, because of restlessness. During the night some abdominal distention was noted. The child was voiding spontaneously at regular intervals. Five hundred cc. of 5 per cent dextrose in H_2O containing pyridoxine (100 mg.) was started at 12:40 A.M. by clysis after the intravenous fluids had been completed. He remained relaxed and quiet with regular respirations of normal depth until 5:00 A.M., when he appeared quite restless. At 5:30 A.M. sodium amytal (0.050 gm.) was given intramuscularly.

In the morning of February 16 he was limp and did not respond to painful stimuli. Temperature was 100.2° F. rectally, pulse was 130, and respirations 32 per minute. Benzathine penicillin (Bicillin C-R600) was given intramuscularly (600,000 units). Two-and-a-half per cent dextrose in 0.45 per cent sodium chloride containing pyridoxine (100 mg.) was given by clysis and followed by 5 per cent dextrose in H_2O with pyridoxine (100 mg.), ascorbic acid (100 mg.), and B complex vitamins. Oxygen and humidity were continued.

Twenty-four hours after admission he was generally

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limp and was unconscious but did respond to painful stimuli. Tendon jerks were present bilaterally. Babinski's reflex was negative. Pupils were constricted and equal.

The same therapy was continued on the following day. The child became more responsive, moving his extremities and blinking his eyes at intervals. Temperature did not exceed 99.8° F. Voiding was spontaneous. On February 18 he was able to take liquids orally. Coordination of body movements was poor. There was difficulty focusing the eyes. Pyridoxine (25 mg.) was given intramuscularly daily from this date to the time of release from the hospital. On February 19 he took a regular diet. Poorly coordinated body movements (and questionable involuntary movements) persisted. He appeared hyperirritable.

General physical examination of February 20 was normal. Neurological examination showed no evidence of brain damage or peripheral nerve involvement. Movements were by this time coordinated. The child was released from the hospital on February 21, 1963, with no apparent residual effect from the isoniazid or therapy.

COMMENTS

The absorption of isoniazid from the gastrointestinal tract is rapid. Toxic symptoms may appear as early as thirty minutes after ingestion.[1] Peak concentrations are reached one to six hours after administration.[2] No gastric lavage was attempted in this case because vomiting had been successfully induced prior to admission and because the child continued to have convulsions until 8:30 P.M.

In reviewing the literature in the English language to discover others' experience with acute isoniazid toxicity, 4 cases of accidental isoniazid poisoning in young children were encountered:

Case 1. A 26-month-old boy, weighing 10 kg. ingested an estimated 1,500 mg. of isoniazid.[3] The child vomited prior to hospitalization. Isoniazid (906 mg.) was recovered from washings of the boy's clothes and 212 mg. were recovered from a twenty-four-hour urine collection. Treatment consisted of phenobarbital sodium (48 mg.) intramuscularly and paraldehyde (10 cc.) rectally.

Case 2. A 19-month-old boy, weighing 11 kg., ingested at least 9 (100 mg.) isoniazid tablets.[4] Gastric lavage was done. Phenobarbital sodium (0.3 gm.) failed to control convulsions. Artificial respiration was necessary because he had ceased breathing. An exchange transfusion of 1,100 cc. of blood was done and the child recovered.

Case 3. A 25-month-old boy, who weighed 13.6 kg.,[5] ingested 18 (100 mg.) isoniazid tablets; within half an hour, gastric lavage was done. Phenobarbital sodium (90 mg.) controlled the seizures. Pyridoxine (100 mg.) was given three hours and seven hours after ingestion of the isoniazid and on the following day. Pyridoxine was given after the convulsions had ceased.

Case 4. A 21-month-old girl, who weighed 11.3 kg.,[5] ingested 30 (100 mg.) tablets of isoniazid. Gastric lavage was done. Phenobarbital sodium (30 mg.) was given and, five minutes later, pyridoxine (100 mg.). Convulsions ceased. Two hours and fifteen minutes later phenobarbital sodium (30 mg.) was given for twitchings which promptly subsided.

DISCUSSION

It has been demonstrated adequately that pyridoxine deficiency can produce convulsions in the human.[6–8]

Pyridoxine is completely effective in preventing grand mal convulsions in man and animals when simple hydrazides such as the semicarbazides are the convulsant agent.[9–11] Approximately equimolar amounts of pyridoxamine are needed to neutralize a given dose of thiosemicarbazide in mice. The very large amount of pyridoxamine required for this reaction, as compared to the amount needed for normal metabolism, suggests that some sort of direct chemical inactivation takes place.[9]

The antagonism of pyridoxine against isoniazid has been demonstrated reliably in mice. However, the antagonism is not complete. Reilly and associates[11] recommended phenobarbital sodium as the anticonvulsant of choice in patients whose convulsions are isoniazid-produced and, if convulsions are uncontrolled, pyridoxine (200 to 400 mg.). Diphenylhydantoin sodium is ineffective in the experimental animal and, therefore, is not indicated in these convulsions.

Biehl and Vilter[12] postulated that isoniazid forms a complex with pyridoxal which is subsequently excreted. Sah[13] in the same year (1954) crystallized the nicotinyl and isonicotinyl hydrazones of pyridoxal.

Williams and Wiegand,[14] in studying the xanthurenic acid excretion in dogs and possible pyridoxine deficiency produced by isoniazid, concluded: "If xanthurenuria be accepted as a measure of pyridoxine deficiency after tryptophane loading, acute pyridoxine deficiency may be said to have been produced by administration of convulsant hydrazides." These authors were impressed by the strong analeptic action of the convulsant hydrazides and observed that much more anesthesia with barbiturate drugs was necessary during the course of their experiments than would be required due to destruction and elimination of the anesthetic—sometimes three times the original anesthetic dose during a six hour period—to counteract convulsions. They also noted that the administration of pyridoxine at the conclusion of the experiment counteracted the convulsions in ten minutes and resulted in deep sedation of the dogs.

Our patient's convulsions did not respond adequately to large doses of sedation. Over a period of four hours (from 4:30 P.M. to 8:30 P.M.) he was given phenobarbital sodium (0.128 gm.), sodium amytal (0.448 gm.), and paraldehyde (2 cc.). Of the cases mentioned in the English literature, the second child required phenobarbital sodium (0.3 gm.), at which point respirations ceased. Artificial respiration and exchange transfusion were lifesaving. These 2 instances corroborate in humans the observations of Williams and Wiegand[14] in dogs that large doses of barbiturates are needed to control isoniazid-induced convulsions. The prompt cessation of convulsions about three minutes after the rapid administration of pyridoxine (100 mg.) intravenously in our patient reflects clinically the same observation of these authors in dogs. The small amount of sedation required in the third and fourth cases culled from the literature possibly is related to administration of pyridoxine.

Our patient received pyridoxine: 500 mg. in the first twenty-four hours, 200 mg. in the second twenty-four hours, and 25 mg. daily for the rest of his hospital stay. Since the production of isonicotinylhydrazone of pyridoxal involves equimolecular amounts of isoniazid and pyridoxine, approximately 150 mg. of pyridoxine hydrochloride can react with 100 mg. of isoniazid. It is necessary to insure an adequate amount of pyridoxine for its normal role of coenzyme for reactions involving transaminations, deaminations, or amino acid decarboxylations. Therefore, there must be an excess of pyridoxine above that which is being conjugated (or inactivated) by isoniazid at all times. It is suspected that more pyridoxine is indicated than has been given in the past for acute isoniazid-induced seizures. The suggestion is made that in patients whose convulsions are induced by isoniazid, large doses of pyridoxine (200 to 400 mg.) be given immediately along with barbiturates and that a steady supply be maintained continuously until all threat of isoniazid toxicity is over.

SUMMARY

A case of acute poisoning from an overdose of isoniazid is described. The possibility of eliminating the danger of overdose of barbiturates by the prompt adequate administration of pyridoxine is entertained.

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METABOLIC ACIDOSIS from salicylate intoxication of dogs is most likely caused by sustained hypocapnia, rather than by direct toxic effect. Intravenous injection of salicylate produces a persistent decrease in partial pressure of carbon dioxide (pCO_2) and results in respiratory alkalosis. A rise in concentration of blood lactic and pyruvic acids accompanies progressive reduction in bicarbonate content, and acid accumulation accounts for most of the true bicarbonate deficit that occurs with reduction of pCO_2 during respiratory alkalosis. Bicarbonate deficit must be corrected before attempts are made to restore pCO_2. Use of 4% CO_2 prevents reduction of pCO_2 in animals, even when under deep anesthesia.

A. EICHENHOLZ, R. O. MULHAUSEN, and P. D. REDLEAF: Nature of acid-base disturbance in salicylate intoxication. Metabolism 12:164-175, 1963.

Surgical Aspects of Tuberculous Empyema in East Pakistan

W. A. ANSARI, F.R.C.S. (Edin.)

Dacca, East Pakistan

TUBERCULOUS EMPYEMA is not an uncommon condition in East Pakistan. Though detailed statistics are not available about the incidence of this disease, the figures so far available from the hospital and also from the practical experience suggest that there has been a considerable decline during the last few years.

Tuberculosis in this province has a high morbidity and mortality. This article includes the author's observation of 9 cases of tuberculous empyema, all subjected to surgery, during the period 1960 to 1962.

CASE REPORTS

Case 1. M. A., a man of 18 years, was admitted on July 8, 1959, in the medical ward with a history of irregular fever and chest pain of eighteen months' duration. There was no hemoptysis and his sputum was negative for acid fast bacilli. X-ray film of his chest showed only densely thickened pleura on the right lower zone, imprisoning the lower part of the lung. He was treated previously with antituberculosis drugs and was operated upon on August 15, 1960.

Findings at operation. A huge empyema cavity lined by a thick fibrous layer (1½ in.) was encountered. Scattered small tubercles were seen on both visceral and parietal layers. No other lesion of the lungs was detected. Decortication was performed and postoperative recovery was uneventful.

Slide of the microphotography. This was a classical case of tuberculous empyema following tubercle formation on the visceral and parietal layers, a rather rare cause of empyema.

Case 2. Z. A., a man of 48 years, was admitted to the surgical ward on April 16, 1961, with a ten-year history of tuberculosis. He had been treated at first by artificial pneumothorax and later, in 1959-1960, with antituberculosis drugs. In 1960 he started having repeated episodes of hemoptysis and empyema with bronchopulmonary fistula developed. The whole chest was contracted with almost no movement of the right side. X-ray film showed evidence of grossly thickened pleura with free calcified bodies inside the chest cavity (figure 1). A bronchogram revealed evidence of cavitation and a bronchopleural fistula in the lower lobe. The rest of the lung showed evidences of bronchiectatic changes. This was a classical example of destroyed lung with bronchopleural fistula. Pleuropneumonectomy was done. In postoperative management, the collection in the chest cavity was aspirated and the pressure adjusted. The fistula completely closed.

Case 3. A. M., a man of 23 years, was admitted on June 5, 1960, with a history of tuberculosis and was treated with chemotherapeutic agents and with repeated artificial pneumothorax. It was a straightforward case of tuberculous empyema treated by decortication and with uneventful recovery.

Case 4. A. A. This man, who presented a typical example of a destroyed lung, came with a history of repeated episodes of uncontrolled hemoptysis. Pleuropneumonectomy was done, but the patient died.

ETIOLOGICAL DISCUSSIONS

In a series of 7,206 cases of artificial pneumothorax, Cuthbert (1950) found 146 cases of tuberculous empyema. Doedey et al. (1951) reported that in 28 per cent of 732 cases serofibrinous effusion developed after pneumothorax. Empyema developed in 20 per cent of these.

Data on a series taken from a sanatorium for the tuberculous in East Pakistan are shown in Table 1.

Empyema after artificial pneumothorax developed in a little less than 25 per cent. Of 10 cases admitted to the surgical ward for treatment, empyema developed in 4 after pneumothorax. On analysis, repeated artificial pneumothorax was the commonest cause of tuberculous empyema. Rupture of a tuberculous cavity was next in frequency. (See table 2.)

Only one patient with spontaneous pneumo-

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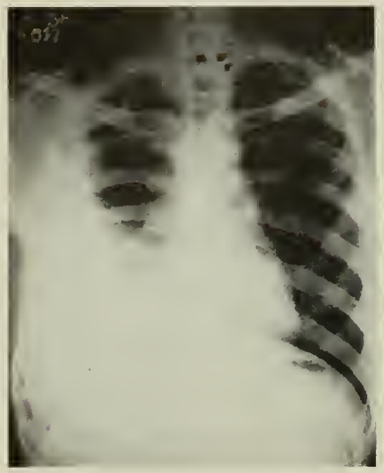

Fig. 1. Grossly thickened pleura

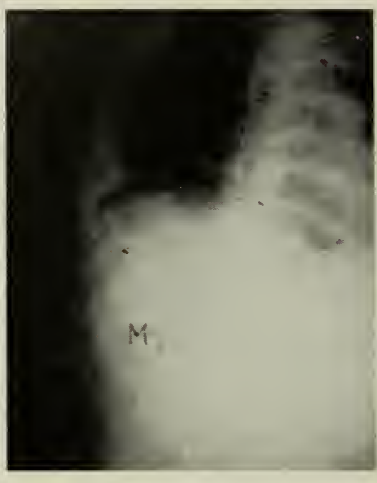

Fig. 2. Immediately after decortication. Lung has fully expanded.

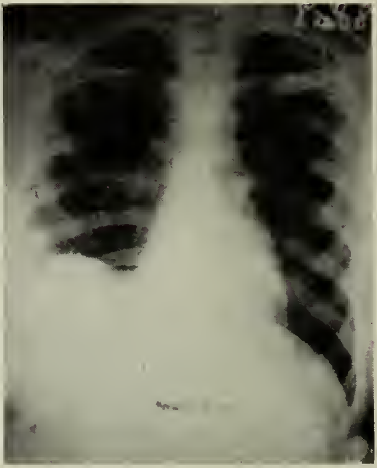

Fig. 3. Late result. Lung has fully expanded.

thorax developed empyema. This patient gave no history of previous aspiration. Pus drawn from the chest cavity failed to reveal secondary organisms and the lung was free from tuberculous cavity. At operation no emphysematous bullae, a common cause of spontaneous pneumothorax, were detected.

Another patient in whom tuberculous empyema developed had tubercles on both the visceral and parietal pleurae. Radiologically the lung was free (figures 2 and 3). The decorticated specimen of empyema cavity showed multiple tubercles (figure 4). The lung at operation was found to be free. Histopathological examination revealed tubercles with giant cell system. This was a classical example of empyema developing after infection of the pleura itself.

TABLE 1

DATA ON SERIES FROM SANATORIUM, EAST PAKISTAN

Year	*Artificial pneumothorax given*	*No effusion*	*Effusion*	*Empyema*
1957	9	3	4	2
1958	10	4	4	2
1959 and 1960	6	3	1	2
Total	25	10	9	6

TABLE 2

ANALYSIS OF 9 CASES ON ETIOLOGICAL BASIS

Etiology	*No. of cases*
1. After artificial pneumothorax	4
2. Spontaneous pneumothorax	1
3. Formation of tubercle on the visceral pleura	1
4. Ruptured tuberculous cavity	3
Total	9

Although antituberculosis drugs have reduced the incidence of empyema, it still remains a significant complication after artificial pneumothorax.

Earlier figures of mortality after tuberculous empyema are grossly discouraging. Brian and Taylor (1932) recorded a mortality of 58.2 per cent in 79 cases. Brock (1943) reported 44 per cent mortality in 90 cases. Konstan and Sedan (1951) had the lowest mortality, 4 in 61 cases. This disappointing situation has completely changed. Mortality is rather negligible at today. There have been deaths in our series of cases after decortication but 1 patient died after pleuropneumonectomy.

DISCUSSION OF TREATMENT

Safest preventive measure is avoidance of bad, ill-planned artificial pneumothorax. All pleural

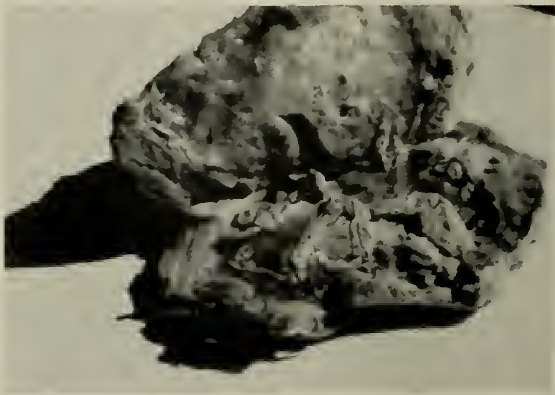

Fig. 4. Specimen of pleural cavity showing scattered small tubercles

effusions should be regarded as potential empyema and treatment should be instituted early and efficiently. The state of underlying lung is the main deciding factor in choosing the type of operation. The surgical measures available are: closed drainage, thoracoplasty, decortication, and pleuropneumonectomy.

The last 3 procedures can be performed in continuation, that is, resection of diseased lobe combined with decortication of the healthy lobe and small compensatory thoracoplasty.

TABLE 3

OPERATIONS PERFORMED IN OUR SERIES OF CASES

Type	*No.*
Closed intercostal drainage	3
Decortication	4
Pleuropneumonectomy	2
Thoracoplasty	0

Treatment with closed drainage was done in 3 early cases with satisfactory results. In 2 cases, streptokinase and streptodornase were injected intrapleurally on every alternate day to liquefy the pus. Secondary infection by pyogenic organisms was avoided by instillation of antibiotics intrapleurally and also by systemic administration. Treatment by repeated aspiration was avoided as there is often infection by secondary organisms. This procedure of closed drainage has been found of more value in secondary infected empyema.

Decortication gave good and encouraging results. This is not a new operation, having first been practiced and described by Delorme in 1894. The procedure became popular after the introduction of antibiotics and gave very encouraging results. It is of great help when the lung is imprisoned by organized fibrous tissue and if there is good reason to believe that there is a considerable healthy area of lung tissue beneath it. The earlier it is done the better results it gives, and technically it is much easier to perform. In all those cases seen after two years of the onset of disease, the decortication was difficult. It was observed that thin fibrinous exudate quickly organized itself into a very thick fibrous layer, preventing expansion and virtually imprisoning the lung. The longer the duration, the tougher was this layer. Apart from this thick layer, in long-standing cases, numerous adhesions between this layer and the lung were observed. The adhesions bleed profusely on cutting, and, if due care is not taken, the lung tissue may be torn away making the decortication more hazardous and difficult. Those adhesions, I think, should be first diathermized and then cut. These adhesions were not seen in cases of less than six months' duration. From experience, although limited, I concluded that these pathological findings must be borne in mind before doing the decortication. Decortication is definitely better than closed drainage or repeated aspiration even in early cases.

TECHNIQUE OF DECORTICATION

A standard thoracotomy incision is made for an adequate exposure. A rib is resected. If the ribs are crowded or synostosed, 2 or 3 should be resected.

The layer of tough fibrous tissue which lies tightly adherent to the lung is incised with a knife and a cruciate incision is made at a convenient part. This incision should be deep enough to reach the visceral pleura. Between this visceral layer and the overlying fibrous tissue, a plane of cleavage is found. A tough membrane can be peeled off by combined sharp and blunt dissection. I have found that such a plane of cleavage can be found near the attachment to the chest wall.

The adhesion of the margins of the lungs with the mediastinum and pericardium is separated by sharp dissection. It is essential that the whole lung be fully and completely separated from the surrounding structures. This allows full expansion of lung postoperatively. In most cases the lung is found merely compressed and as the peeling goes on the lung underneath expands.

In some cases a thick fibrous layer covering the parietal pleura is encountered. This layer must be removed to improve the pulmonary function. The chest is closed with an intercostal underwater seal drainage.

Exclusive thoracoplasty has proved to be unsatisfactory as a primary procedure because it often fails to obliterate the empyema cavity, especially in the presence of bronchopleural fistula with grossly diseased lung and also in late cases. Perhaps thoracoplasty has a place in early and small empyema with moderately expanded underlying lung. It has a definite place as a secondary measure for obliterating the dead space after resection.

Pleuropneumonectomy was performed in 2 patients, one of whom died. This is an operation of choice in those cases where empyema is associated with gross pulmonary disease with or without fistula. Sometimes after pleuropneumonectomy complementary thoracoplasty is done to obliterate the dead space.

In preparing this article I am grateful to Prof. S. M. Rab, Prof. N. Islam, Prof. K. A. Khaleque, Dr. Ehsanual Huq, and Dr. Raquib.

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CERVICAL SPONDYLOSIS can be detected radiologically in about four-fifths of persons over 55 years of age. Symptoms often are related to head and neck movement, and roentgenographic examination should include lateral views on flexion and extension, views in the erect position, and sometimes views on lateral flexion. Head rotation can produce symptoms by temporarily impairing blood flow through the atlantoaxial segment of the contralateral vertebral artery and the ipsilateral vertebral artery. Extension of the neck also may cause symptoms, but the obstruction apparently does not occur in the atlantoaxial segment. Occipital headache is common in cervical spondylosis and often seems to originate in the joints. Symptoms ranging from vertigo to unconsciousness may result from vertebrobasilar ischemia temporarily caused or exacerbated by head movements. Acute vascular lesions of the cerebellum or brain-stem may be precipitated by incidental or therapeutic manipulation. If the patient has bundle-branch block, vertebral artery compression during changes in head posture may contribute to paroxysmal heart block and attacks of unconsciousness. Epileptiform convulsions can occur because of compression of a vertebral artery by a protruded intervertebral disk.

SIR RUSSELL BRAIN: Some unsolved problems of cervical spondylosis. Brit. med. J. 5333:771-777, 1963.

HEARTBURN SYMPTOMS are more closely correlated with increased reactivity of the distal esophagus to refluxed gastric contents than with inflammation. Resultant irregular esophageal motor activity includes increased amplitude and duration of peristaltic contractions, spontaneous nonprogressive contractions that are not in response to swallowing, and increased esophageal tone as indicated by higher intraluminal pressure. Reflux of irritating material is facilitated by decreased tone of the lower esopageal sphincter. Histological, clinical, and acid-perfusion studies with intraluminal manometric recordings were correlated in 25 patients with heartburn thought to have esophagitis, and findings were compared with those in 25 without esophageal symptoms. Symptoms of heartburn did not correlate well with gross and histological evidence of esophageal inflammation. In patients with heartburn, acid perfusion reproduced symptoms, and the patients had lower esophageal motor abnormalities.

CHARLES I. SIEGEL and THOMAS R. HENDRIX: Esophageal motor abnormalities induced by acid perfusion in patients with heartburn. J. clin. Invest. 42:686-695, 1963.

Robert B. J. Schoch, M.D.

E. V. GOLTZ, M.D.

St. Paul

THE LITTLE RED SCHOOL HOUSE, rapidly becoming a part of history in the evolution of education in Minnesota, brings only the fondest of memories to one who has contributed so much to the well-being of his fellow men—Dr. Robert B. J. Schoch, chief health officer of St. Paul since 1934.

As Dr. Schoch says, "Actually it wasn't a little red school house I attended, but a white one in Maple Grove, Dayton Township, Hennepin County. However, it was the same type of little building in which all eight grades were conducted in one room and by one teacher. We learned the 'three Rs' under a 'school marm' with the exception of one period of instruction by an old schoolmaster." Dr. Schoch boasts that the school house is standing on the original site and is still utilized.

Robert was the second youngest of 10 children, 6 boys and 4 girls, born to Jacob Schoch and his wife, the former Margaret M. Simon. He was born November 16, 1883, on the farm at Maple Grove, about 6 miles from Osseo. Young Robert helped his father with the chores and attended the little country school. "The school was 2 miles from our farm," he reminisced, "and, with my sisters and brothers, I walked the distance twice each day, rain or snow, through sleet or blizzard. We came across country jumping fences along the way. Those were great days." Still recollecting events of his childhood on the farm, he said, "I look back now with nostalgia to spring and the tapping of the maple trees for sap which later was made into maple sugar and maple syrup. It was a thrilling adventure for small boys to go into the woods with the men and to follow the horse-drawn stoneboat on which the collected pails of maple sap were placed. But today, there is scarcely a maple tree to be found in the area."

The Schochs were Evangelical Brethren and, as parents of a large family, they hoped that one of their sons would enter the ministry. Robert was the son they considered most suited for the vocation, but, even in his early childhood, he had other ideas. Robert decided to enter the medical profession and had the strength to fight for his own convictions. He has always recognized the responsibility to his patients as a practicing physician and to the public in his current position as St. Paul's health officer. Dr. Schoch has exemplified the true meaning of the word "dedicated," used many times in reference to his services of more than half a century.

When Robert Schoch completed his high school course in a record time of three years, he matriculated at Hamline University in St. Paul. I was also a medical student at Hamline University. When questioned about his long career with few vacations, Dr. Schoch usually says: "I learned early to be always on the job. I worked my way through school, and on week ends, holidays, and vacations I had a job. My steady employment is due to the fact that my uncle, Andrew Schoch, was owner of a large food market in St. Paul." During these years he learned from experience the importance of the care and handling of foodstuff. From Hamline, Robert Schoch and I both went to Northwestern University Medical College in Chicago. We studied medicine together and were roommates at the Nu Sigma Nu fraternity chapter house where we lived while attending medical college. Dr. Schoch was graduated from Northwestern University Medical School in 1908; he served his internship at Grant Hospital in Chicago. I served my term as intern at Ancker

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E. V. GOLTZ *is a St. Paul physician.*

Hospital in St. Paul, the city also chosen by Dr. Schoch to begin his career as a general practitioner. When the new Lowry Medical Arts building was completed, Dr. Schoch and I set up an office partnership which continued through the years to the time he was appointed chief health officer and for a short period thereafter. This was a happy association, and during these years, I watched Dr. Schoch, a well-trained general practitioner, gain a valuable place in the community.

"Schoch" was a name that was frequently mentioned in connection with the pioneer leaders in Minnesota's early history. Robert's father, Jacob Schoch, enlisted in the First Minnesota Light Artillery at Osseo. His name, along with those of other honored veterans, may be seen today in the inscription on the Civil War monument in Osseo. When World War I began, Dr. Schoch joined the Army as a first lieutenant in the Medical Corps. He was stationed at Camp Green, North Carolina, where, during the flu epidemic, "men were dying like flies," and then he was sent to France, where he served with the 55th Engineers at Camp Muntiershaum, near Chaterreaux. Later he served with a hospital supply depot. In 1919 he was discharged as a captain, and he then returned to his practice of general medicine in St. Paul.

Dr. Schoch was active in St. Paul and Minnesota Civil Defense work during World War II and has continued this interest to the present time. He had become a highly honored member of the medical profession. He typified the "family doctor," never too weary to answer a call after a busy day if he thought he could render a service. He was always civic minded and could be counted on to back any project promoted for the betterment of his community. Dr. Schoch married Miss Marie Ackerman in 1939. Her charming personality and interest in cultural and community projects enabled her to inspire and assist the doctor.

The doctor has always "liked people" and his desire to help them has been the motivating instrument of his success. Although he has been fond of hunting, fishing, and golf, he has never had time to enjoy them. His one hobby is playing the snare drums. He is a member of the Masons' Braden Lodge and was honored with a fifty-year button in the spring of 1958. He is a member of the Minnesota Consistory of the Scottish Rite and Osman Temple of the Shrine. He takes great pride in having been a member of the snappy Shrine Drum Corps, which he accompanied to many cities and with which he marched in convention parades.

Dr. Schoch is a member of the Ramsey County Medical Society; Minnesota State Medical Association, a Fifty Club member in 1959; American Medical Association; Minnesota Public Health Association; Middle States Public Health Association; and Fellow-American Public Health Association. He is on the board of directors of the Minnesota Tuberculosis and Health Association, Ramsey County Tuberculosis and Health Association, Family Nursing Service of St. Paul, St. Paul Area Health Council–Community Chest, Ramsey County Red Cross, and Minnesota Civil Defense. He was president of the Ramsey County Medical Society in 1939 and of the Business and Professional Men's Association of St. Paul in 1941.

Of particular interest is the incident which brought about the change in careers from general practitioner to public health officer. In 1934, Mr. Ned Warren was elected to the office of commissioner, Department of Public Safety. When Dr. Schoch called on him the day he took office, he said, "I wish you luck; you have one of the toughest jobs on the council." As he was leaving the office, a newsman suggested to Mr. Warren, "Why don't you appoint him chief health officer?" Mr. Warren immediately acted upon the suggestion; when Dr. Schoch left the office, he was in public health work. During his years of general practice and participation in civic interest projects, Dr. Schoch was well acquainted with the health problems of St. Paul. His cousin, the late Dr. B. F. Simon, had ably served as health officer in St. Paul from 1918 through 1933. The present commissioner of the St. Paul Department of Public Safety, under which the Bureau of Public Health is administered, is Robert F. Peterson.

Since Dr. Schoch has been chief medical officer, many firsts in public health projects have brought honor to the city. St. Paul was the first city in the nation to adopt an ordinance regulating the processing, packing, and sale of frozen meat, fish, and poultry products; the ordinance passed July 1, 1950.

St. Paul was one of the first cities to provide free mass polio inoculations to school children. In cooperation with the United States Public Health Service, the University of Minnesota Medical School, and the Minnesota State Department of Health, the St. Paul Bureau of Health has recently completed studies on epidemic meningitis, Q fever, and mass x-ray examination and is currently engaged in an oral polio vaccine study.

Everyone who knows Dr. Schoch is aware of the fact that he is a perfectionist. When he assumed the responsibilities of chief health officer, he immediately became involved in the work at hand and the work to come, looking into the future and estimating the needs of health programs. As soon as he took office, he began to visualize larger quarters for the bureau's operation through which better health services could be offered to the community.

The bureau's crowded quarters challenged Dr. Schoch. He was practical in his hopes for a new public health center as he evaluated and planned for the facilities necessary to make it a model of usefulness in serving the community. His superiors and associates were in accord with the plans, and no suggestion offered was too small for Dr. Schoch to discuss. There was one big obstacle—a lack of funds.

With the passing of the Hill-Burton Act, Dr. Schoch and the late Dr. A. J. Chesley of the Minnesota State Board of Health began talking about the possibilities of the new health center. Several times plans were started to remodel old buildings, but these failed to materialize.

In 1953, the residents of St. Paul passed a $39,000,000 bond issue for civic improvements. This spearheaded the actual planning and building of St. Paul's new public health center. There were many headaches between the approval of the bond issue and the completion of the center, but their activities were never decelerated. In 1958, Dr. Schoch and some 80 employees moved into the beautiful new public health center on St. Paul's capitol approach. It is a 2-story structure, built at a cost of approximately $1,032,000. The project received Hill-Burton construction grants from the Minnesota Department of Health as well as the funds from the 1953 bond issue. The building is constructed so that a third story can be added if services of the health department need to be expanded. Mr. Boris L. Levich is director of administration and Dr. H. E. Erickson supervises the food and dairy division. Three physicians are employed by the bureau to investigate communicable diseases in St. Paul. The medical division provides public health nursing services for St. Paul's 26,000 or more school children. Its staff of 14 nurses is directed by Mrs. Ann Kistler, R.N.

Dr. Schoch, as his predecessors did, has manifested interest in tuberculosis control. The bureau's tuberculosis control division is supervised by Miss Violet Glyer, R.N. Nine public health nurses are employed to carry on the case-finding in all city schools, industry, and special areas of the city, and the division has a tuberculosis case registry. In addition to x-ray films and Mantoux testing for tuberculosis, this division handles outpatient treatment of tuberculosis patients. A birth and death unit, a well-child clinic, and a dental clinic are also housed there. The center is equipped with an auditorium, which seats 250 persons and is used as a classroom.

It is with the greatest admiration for Dr. Schoch that I wish him many happy years of service in the center. Few men, today, see their dreams become a reality, but one man—Dr. Robert Schoch—made his come true by his unselfish devotion and service.

PULMONARY ARTERIOVENOUS fistulas often occur in association with hereditary hemorrhagic telangiectasia. The classic triad of cyanosis, polycythemia, and clubbing of fingers and toes may be lacking if the shunt is less than 25%, if signs are masked by anemia from bleeding, or if the fistula is in the greater, rather than the lesser, circulation. Therefore, periodic chest roentgenograms to detect such fistulas should be made in persons with hereditary hemorrhagic telangiectasia and in members of their families. Roentgenograms show the fistulas as rounded or lobulated densities connected to the hilar structure by broad, tortuous, linear shadows. Venous angiocardiography often reveals unsuspected fistulas. During fluoroscopy, the mass pulsates and becomes smaller during expiration with a closed glottis and grows larger with deep inspiration against a closed glottis. Tomography usually demonstrates the lesion well enough to be diagnostic. A bruit often is heard and a thrill felt in the vicinity of the lesion. If a fistula is enlarging, it should be removed. Removal also is indicated if the patient has cyanosis and polycythemia or if hemoptysis or hemothorax supervene. Of 35 patients with pulmonary arteriovenous fistula, 17 had a family history of hemorrhagic telangiectasia and 23 had telangiectasia.

CORRIN H. HODGSON and RONALD L. KAYE: Pulmonary arteriovenous fistula and hereditary hemorrhagic telangiectasia: a review and report of 35 cases of fistula. Dis. Chest 43:449-455, 1963.

PLASMA INSULIN values during normal late pregnancy differ significantly from those in the postpartum period. Fasting values are higher during the thirty-sixth and fortieth weeks of normal gestation than after forty days post partum. Furthermore, release of insulin in response to intravenous injection of 50 cc. of 50% glucose is greater during pregnancy. Data are based on insulin values measured by radioimmunioassay in 20 healthy women.

WILLIAM N. SPELLACY and FREDERICK C. GOETZ: Plasma insulin in normal late pregnancy. New Engl. J. Med. 268:988-991, 1963.

Transactions of the North Dakota State Medical Association

SEVENTY-SIXTH ANNUAL MEETING

Dickinson, North Dakota, May 4, 5, 6, and 7, 1963

OFFICERS

President	E. J. LARSON, Jamestown
President-Elect	AMOS GILSDORF, Dickinson
First Vice-President	G. A. DODDS, Fargo
Second Vice-President	J. D. CRAVEN, Williston
Speaker of the House	L. A. CHRISTOFERSON, Fargo
Vice-Speaker of the House	C. H. PETERS, Bismarck
Secretary	W. M. BUCKINGHAM, Bismarck
Treasurer	R. D. NIERLING, Jamestown
Delegate to the A.M.A.	T. E. PEDERSON, Jamestown
Alternate Delegate to the A.M.A.	R. C. PAINTER, Grand Forks

COUNCILLORS

Terms expiring 1963

Fourth District	F. D. NAEGELI, Minot
Fifth District	G. CHRISTIANSON, Valley City
Tenth District	R. W. McLEAN, Hillsboro

Terms expiring 1964

Second District	G. W. TOOMEY, Devils Lake
Seventh District	T. E. PEDERSON, Jamestown
Eighth District	DEAN STRINDEN, Williston
Ninth District	KEITH FOSTER, Dickinson

Terms expiring 1965

First District	F. A. DE CESARE, Fargo
Third District	R. E. MAHOWALD, Grand Forks
Sixth District	C. H. PETERS, Bismarck

Councillor at Large

E. H. BOERTH	Bismarck

COUNCIL: Officers	COUNCIL: Executive Committee
G. W. TOOMEY, Chairman	G. W. TOOMEY
T. E. PEDERSON, Vice-Chairman	T. E. PEDERSON
C. H. PETERS, Secretary	C. H. PETERS

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Terms expiring 1964

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V. G. BORLAND	Fargo
F. D. NAEGELI	Minot

Terms expiring 1965

R. D. NIERLING	Jamestown
G. W. TOOMEY	Devils Lake
H. L. REICHERT	Dickinson

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J. F. HOUGHTON	Fargo
H. A. NORUM	Fargo
J. R. MURRAY	Fargo
G. H. HALL	Fargo
J. F. SCHNEIDER	Fargo
C. M. HUNTER, alternate	Fargo
D. H. LAWRENCE, alternate	Fargo
W. L. MACAULAY, alternate	Fargo
J. S. GILLAM, alternate	Fargo
B. F. AMIDON, alternate	Fargo
MARSHALL LANDA, alternate	Fargo

SECOND DISTRICT

G. H. HILTS	Cando
G. W. SEIBEL	New Rockford
C. G. JOHNSON, alternate	Rugby
R. D. McBANE, alternate	Devils Lake

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R. H. LEIGH	Grand Forks
J. A. SANDMEYER	Grand Forks
R. H. DE LANO	Northwood
K. S. HELENBOLT	Grand Forks
G. L. COUNTRYMAN	Grafton
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W. W. FREY, alternate	Drayton
C. B. PORTER, alternate	Grand Forks
T. L. SCHAFER, alternate	Grand Forks
W. W. NELSON, alternate	Grand Forks
W. P. TEEVENS, alternate	Grafton

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A. M. CAMERON	Minot
S. E. SHEA, alternate	Minot
ROGER SORENSON, alternate	Minot
I. T. ROYLE, alternate	Garrison
JENS SAHL, JR., alternate	Minot

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C. J. KLEIN, alternate	Valley City

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C. J. BAUMGARTNER	Bismarck
E. G. VINJE	Hazen
P. O. DAHL	Bismarck
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R. B. TUDOR	Bismarck
M. A. K. LOMMEN	Bismarck

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J. V. MILES, JR., alternate	Jamestown

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C. R. PETTY, alternate	Williston

NINTH DISTRICT

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N. R. ORDAHL	Dickinson
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K. M. WAKEFIELD, alternate	Cooperstown

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M. T. LAMPERT	Minot
ROBERT PAINTER	Grand Forks
L. E. WOLD	Fargo
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DAVID JAEHNING	Wahpeton
M. W. GARRISON	Minot
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GALE RICHARDSON	Minot
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Appointment expiring 1963

DEAN STRINDEN	Williston
R. B. TUDOR	Bismarck

Appointment expiring 1964

W. C. HURLY	Minot
MARSHALL LANDA	Fargo

Appointment expiring 1965

K. G. FOSTER	Dickinson
RALPH MAHOWALD	Grand Forks

SPECIAL COMMITTEES

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GALE RICHARDSON	Minot
JOHN GILLAM	Fargo
WALLACE NELSON	Grand Forks
L. W. LARSON	Bismarck
ROBERT TUDOR	Bismarck
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JOHN GOFF	Fargo
C. A. ARNESON	Bismarck
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R. W. PIERSON	Bismarck
NEILL GOLTZ	Fargo
C. A. BUSH	Beach
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JOHN GILLAM	Fargo
CARL BAUMGARTNER	Bismarck
BLAINE AMIDON	Fargo
R. T. GAMMELL	Kenmare
W. B. ARMSTRONG	Minot
ALICE PETERSON	Bismarck
RALPH DUKART	Dickinson
J. W. JANSONIUS	Jamestown
THOMAS SCHAFER	Grand Forks
W. G. GARRETT	Bismarck

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B. HORDINSKY	Drake
CHARLES PETTY	Williston
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D. G. MC INTYRE	Rugby
WARREN JENSEN	Valley City
G. H. HEIDORN	Minot
KARL OJA	Portland
K. M. WAKEFIELD	Cooperstown
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B. A. MAZUR	Fargo
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G. M. HART	Minot
J. J. MC LEOD	Grand Forks
G. E. ELLIS	Williston

G. C. FOSTER	Fargo
G. W. TOOMEY	Devils Lake
NORMAN ORDAHL	Dickinson
J. V. MILES	Jamestown
H. P. SMEENK	Bismarck

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M. J. GEIB	Fargo
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L. L. HOOPES	Minot
K. M. WAKEFIELD	Cooperstown
M. W. GARRISON	Minot
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R. O. SAXVIK	Bismarck
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A. C. KOHLMEYER	Fargo

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G. L. WILTSE	Wahpeton
C. M. GRAHAM	Grand Forks
C. J. KLEIN	Valley City
T. E. PEDERSON	Jamestown

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JOSEPH CRAVEN	Williston
E. J. BEITHON	Wahpeton
R. D. NIERLING	Jamestown
T. H. HARWOOD	Grand Forks

Liaison Committee to the North Dakota State Bar Association

PAUL JOHNSON, Representative	Bismarck

Committee on Pharmacy

O. A. SEDLAK, Chairman	Fargo
E. L. GRINNELL	Grand Forks
NEIL MACDONALD	Valley City
E. G. VINJE	Hazen

Liaison Committee to the Woman's Auxiliary to the North Dakota State Medical Association

G. W. TOOMEY, Chairman	Devils Lake
E. H. BOERTH	Bismarck
E. J. LARSON	Jamestown
WILLIAM BUCKINGHAM	Bismarck
A. R. GILSDORF	Dickinson

Liaison Committee to the North Dakota State Dental Association

DAVID JAEHNING, Representative	Wahpeton

Medical Center Advisory Council

P. H. WOUTAT, Member	Grand Forks

Governor's Health Planning Committee

G. A. DODDS, Member	Fargo

State Health Council

Members: PERCY OWENS	Bismarck
R. F. GILLILAND	Dickinson

Committee on Liability Insurance

JOSEPH SORKNESS, Chairman	Jamestown
P. H. WOUTAT	Grand Forks
O. W. JOHNSON	Rugby
O. A. SEDLAK	Fargo

Committee on Cardiovascular Diseases (Liaison Committee to the North Dakota Heart Association)

ROBERT STORY, Chairman	Fargo
R. M. FAWCETT	Devils Lake
H. C. WALKER, JR.	Williston
KENNETH AMSTUTZ	Minot
MACK TRAYNOR	Fargo
P. ROY GREGWARE	Bismarck
CHARLES HAMILTON	Bismarck
JOHN BOYLE	Garrison
JAMES F. HOUGHTON	Fargo

Committee on Emergency Medical Service

RALPH MAHOWALD, Chairman	Grand Forks
DOUGLAS LINDSAY	Fargo
ROBERT NUESSLE	Bismarck
JAMES MURRAY	Fargo
DOLSON PALMER	Cando
C. M. GRAHAM	Grand Forks
PAUL AHLNESS	Bowman
A. C. FORTNEY	Fargo
JOHN BEALL	Jamestown

Advisory Committee to the Multiple Sclerosis Society

ROBERT IVERS, Chairman	Fargo
G. H. HEIDORN	Minot
C. M. GRAHAM	Grand Forks
RALPH DUNNIGAN	Bismarck
M. V. TRAYNOR	Fargo
GERALD KAVANAUGH	Fargo

Crippled Children's Services Division to the Public Welfare Board of North Dakota

D. E. SKJEI, Representative	Williston

REFERENCE COMMITTEES

1. *To consider report of President, Secretary, Executive Secretary, and Treasurer:*

W. C. HANEWALD, Chairman	Dickinson
G. H. HALL, Vice-Chairman	Fargo
KENNETH HELENBOLT	Grand Forks
R. B. TUDOR	Bismarck
GALE RICHARDSON	Minot

2. *To consider reports of Council, Councillors, and Special Committees:*

JAMES LITTLE, Chairman	Mayville
R. H. LEIGH, Vice-Chairman	Grand Forks
G. W. SEIBEL	New Rockford
A. MALCOLM CAMERON	Minot
H. A. NORUM	Fargo

3. *To consider report of Delegate to A.M.A., Medical Center Advisory Council, and Committee on Medical Education:*

JOHN SANDMEYER, Chairman	Grand Forks
C. J. BAUMGARTNER, Vice-Chairman	Bismarck
WILLIAM LA ROCHELLE	Stanley
C. J. KLEIN, alternate	Valley City
J. F. SCHNEIDER	Fargo

4. *To consider reports of Standing Committees, except Committee on Medical Education and Committee on Medical Economics:*

GEORGE COUNTRYMAN, Chairman	Grafton
P. O. DAHL, Vice-Chairman	Bismarck
J. B. MURRAY	Fargo
G. H. HILTS	Cando
D. E. SKJEI	Williston
M. A. K. LOMMEN	Bismarck

5. *To consider reports of the Committee on Medical Economics, including Advisory Committee to Public Assistance Division of State Welfare Board, Committee on Rural Health, and Governor's Health Planning Committee:*

A. C. BURT, Chairman	Fargo
E. G. VINJE, Vice-Chairman	Hazen
ROBERT DE LANO	Northwood
N. B. ORDAHL	Dickinson
JOHN VAN DER LINDE	Jamestown

6. *Committee on Resolutions to include New Business:*

M. E. NUGENT, Chairman	Bismarck
J. N. ELSWORTH, Vice-Chairman	Jamestown
J. F. HOUGHTON	Fargo
LLOYD GILTNER	Minot
R. C. PAINTER	Grand Forks

7. Committee on Credentials:

M. A. K. LOMMEN, Chairman (Also serves on committee No. 4)	Bismarck
R. C. PAINTER, Vice-Chairman (Also serves on committee No. 6)	Grand Forks

PROCEEDINGS

of the House of Delegates of the North Dakota State Medical Association Seventy-Sixth Annual Meeting

The First Session of the House of Delegates of the North Dakota State Medical Association was called to order by the Speaker of the House, Dr. Lee Christoferson, at 3 P.M., May 4, 1963, in the Ray Hotel, Dickinson, North Dakota.

Dr. Lommen, chairman of the Credentials Committee, reported a quorum present and credentials in order.

Speaker Christoferson stated that due to a lack of paid memberships in certain districts, according to the Constitution and By-Laws, only 4 delegates from the Third District and 3 delegates from the Fourth District could be seated.

The motion was made and seconded that the Grand Forks District Society be allowed to seat 6 members.

Speaker Christoferson advised that as there is no provision for this, it would mean a change in the constitution and by-laws, and that he would refer it to the committee on resolutions. He said that if such a resolution is brought in, it still would not be effective until next year. He further stated that he was very sorry about this, but, according to the rules, he must seat the top delegates listed. He pointed out that he had no alternative but to carry out the rules as instructed by the council.

Dr. Richardson asked if the Fourth District could have an alternate delegate seated. Dr. Christoferson advised him that the Fourth District was entitled to seat 3 delegates and that he had already seated Dr. A. M. Cameron.

Secretary Buckingham called the roll. The following delegates and alternates responded:

Drs. A. C. Burt, Fargo; H. A. Norum, Fargo; J. F. Schneider, Fargo; C. M. Hunter, alternate, Fargo; G. H. Hilts, Cando; G. W. Seibel, New Rockford; R. C. Painter, Grand Forks; R. H. Leigh, Grand Forks; J. A. Sandmeyer, Grand Forks; R. H. DeLano, Northwood; G. R. Richardson, Minot; L. A. Giltner, Minot; A. M. Cameron, Minot; C. J. Klein, alternate, Valley City; C. J. Baumgartner, Bismarck; E. G. Vinje, Hazen; P. O. Dahl, Bismarck; M. E. Nugent, Bismarck; R. B. Tudor, Bismarck; M. A. K. Lommen, Bismarck; J. N. Elsworth, Jamestown; J. Van der Linde, Jamestown; D. E. Skjei, Williston; W. C. Hanewald, Dickinson; N. B. Ordahl, Dickinson; J. M. Little, Mayville.

There were 26 delegates and 2 alternates present. The following also attended the House of Delegates meeting:

Drs. G. A. Dodds, Frank DeCesare, R. W. McLean, E. H. Boerth, C. H. Peters, E. J. Larson, Amos Gilsdorf, T. E. Pederson, C. J. Glaspel, R. E. Mahowald, J. D. Craven, G. W. Toomey, C. M. Lund, and Mr. L. A. Limond, Mr. Daniel Buchanan, and Mr. Charles Johnson.

Speaker Christoferson requested that the Committee on Credentials inform the secretary of members who might arrive later.

Dr. Christoferson asked members to stand for a moment of silence out of respect for 14 valued members who died during the past year.

The motion was made, seconded, and passed that the reading of the minutes of the last session be dispensed with and that they be accepted as printed in THE JOURNAL-LANCET.

Dr. Christoferson then introduced Doctor J. Arthur Myers from THE JOURNAL-LANCET. Doctor Myers' remarks follow: "Thank you. It has been exceedingly pleasing to us over the past two or three years to note the increase in manuscripts received from the North Dakota doctors. Last year 24 of the North Dakota doctors sent us manuscripts. We have excellent prospects for increasing that this year. Dr. Berg is preparing a series of articles. Dr. Pray is also preparing a series from his district. We are so glad we are having a fine series of articles from Dr. Dodds on chest surgery, including papers on cardiovascular lesions. We will have a special edition soon on diabetes from Dr. E. A. Haunz of Grand Forks.

The dean of your medical school, Dr. Harwood, is assembling papers for an issue of manuscripts to be written by former graduates of your school of medicine. It looks as though we will have more authors from North Dakota next year than we have ever had in the past.

We are approaching our one hundredth year. Your journal was founded in 1870. We would like to start making plans for a large celebration, perhaps giving several issues over to the centennial celebration. There has been such a tremendous improvement in medicine over the past one hundred years, that we would like to have a special edition from North Dakota for that year.

As I understand it, the agreement with your association and THE JOURNAL-LANCET expires at the present time. I feel that we should start working immediately to gather material for these centennial issues, as it is going to take a long time to get all this material lined up. I would like to show the world what a tremendous amount of work has been done in the states. I would like to have an arrangement whereby we could start to work with committees from this state and other states for this centennial celebration. I know nothing about the business affairs of THE JOURNAL-LANCET, but I asked the publisher if there would be any changes, and he said there would be no changes whatsoever in the agreement with North Dakota, insofar as he was concerned. Thank you."

Speaker Christoferson announced that Mr. Charles Johnson, field supervisor from the American Medical Association was in attendance at the meeting. Mr. Johnson had asked that he be allowed an hour to make a presentation to the House of Delegates. Doctor Christoferson said that he had informed him that that much time was not available.

Dr. Christoferson asked that all reports, as printed in the Handbook, be referred to the proper reference committees for their study and report to the House of Delegates the following day.

REPORT OF THE PRESIDENT

1962 was a momentous year for American medicine. We saw the medical profession in the neighboring province of Saskatchewan, Canada, undergo vicious, unfair, and undignified pressures which were exerted by brazen politicians whose only objective was political power and votes. At almost the same time, we saw and experienced similar attacks upon the profession, initiated in our own Congress. Again, the purpose was entirely political. Several politicians felt they had a vote-getting program and used all the power and prestige at their command in an effort to foist a socialistic hospital-medical program on the people of the United States. Worse still, their campaign was financed, for the most part, out of the United States Treasury! The King-Anderson Bill called for a relatively small beginning, but its proponents admitted freely that it was only a wedge to open the door to the eventual federal control of the practice of medicine. Medical care through social security has been resurrected again; we still, then, have a lot of unfinished business before us. The medical profession and its allies did a tremendous job last year, and I am confident that they can be depended upon to do equally well this year, and for so long as is necessary.

In the past year, I visited the American Medical Association annual meeting at Chicago in June; the American Medical Association Institute at Chicago in August; the American Medical Association clinical meeting at Los Angeles in November; and the North Central Medical Conference in Minneapolis, also in November. Those meetings proved a real "eye-opener" to me. It is with great satisfaction, I can tell you, that our American Medical Association is doing the tremendous job it is. It is truly a democratic institution, with its roots beginning right here in our own district societies, extending to our own House of Delegates, and from there to the House of Delegates of the American Medical Association. What the American Medical Association is depends largely upon the type of delegates we send, and I am happy to say that my observation shows me that they are a sincere, dedicated, hard-working group that struggles with many difficult problems. All of these men serve without pay, and this includes the officers of the American Medical Association. I salute them for their generous contributions of time and money to the welfare of medicine.

I have visited nearly all of the state's district societies and have found not only good representation, but generally a good spirit of fellowship. We have a strong association in our state, having in 1962 over 450 active members. One of the best things we can do for organized medicine, of course, is to attend our meetings regularly, speak up, bring out our ideas, and see that the delegates and councillors are informed of our thinking. Also, I believe it would be very helpful if each society offered an opportunity for our councillors, delegates, delegates to the American Medical Association, our executive secretary, and chairmen of our more active committees to visit our societies and discuss problems of general interest. This would be of benefit to officers as well as members of the societies. When a physician knew he was to be called upon for a report, he would no doubt have greater interest in the meeting and greater interest in his work within the association.

This has been a legislative year, and many bills were introduced which were of interest to medicine. Some passed very nicely, and, unfortunately, others fell by the wayside. I shall not go into detail on this subject, since Dr. O. W. Johnson will cover it fully in his report of the Committee on Legislation.

Our medical school has had a big year and is doing a fine job. I should like to see the two-year school expanded, if possible, to take in more students. There is an ever-increasing demand for physicians, and the country will be best served only if we have an adequate supply of well-trained young men and women of good character entering the profession every year. It is our obligation to encourage young men and women to enter the study of medicine, and it is also our obligation to assist them in every way. Wherever there is a shortage of physicians, the tendency is for the ranks to be filled with quacks, irregulars, and paramedical personnel.

It has been my thought, as president of the association, that I could accomplish most on behalf of the profession through the selection of competent committees and committee chairmen. The function of a committee depends greatly on the chairman, and I am glad to say that we have had a strong committee organization throughout the state the past year. Most of the committees have met from one to several times and have had a good attendance. The men have contributed freely of their time and their money for transportation and expenses, and I wish to congratulate and thank our committee members for an excellent performance this year.

I also wish to thank Mr. Lyle Limond, our executive secretary, for being a great help to me; Mr. Daniel Buchanan, director of public information and education, who has also been very helpful, and Mrs. Fremming, who is always available to assist the physicians in her very competent way.

It has been a real pleasure and an honor to be your president during the past year, and I want to thank each of you for the many courtesies you have shown me.

E. J. Larson, M.D., President

REPORT OF THE SECRETARY

The following report of the secretary is respectfully submitted:

MEMBERSHIP: The total membership for 1962 was 466. Of this number, 435 paid the regular membership fee, 1 paid one-half year's dues, 4 were on a limited basis, and 25 were honorary members. One member was carried on a complimentary basis due to military service. Fourteen physicians passed away during the year, 2 of whom were former members, and several have left the state. New members, however, are being steadily added to our roster.

Table I shows the annual membership for the past five years:

TABLE 1
COMPARISON OF ANNUAL MEMBERSHIP

	1958	1959	1960	1961	1962
Paid memberships	403	418	418	436	436
Honorary memberships	16	24	24	26	25
Limited and retired	9	4	5	3	4
Dues cancelled (military service and age exemption)	5	2	4	1	1
	433	448	451	466	466

Table 2 shows the annual dues payments according to the cutoff date for preparation of this report for the past five years. The cutoff date of April 12, 1963, has given members a grace period of six weeks in which to pay their current dues, even though the constitution and by-laws of the association state that all assessments must be forwarded to the secretary not later than the first day of March of each year. You will note that even with the extension of time, quite a large number of members are delinquent in dues payments.

TABLE 2

	April 15 1959	April 13 1960	April 17 1961	May 1 1962	April 12 1963
Paid-up members	309	335	348	374	388
Honorary members	20	22	27	25	21
To be honorary	4	5	2	2	1
Dues cancelled, military service	3	2	2	1	–
Limited	1	2	1		2
Retired	1	1			2
	338	367	380	402	414

STATE ASSOCIATION MEMBERSHIPS

1962—Total Membership 466

District	Regular	Retired	Limited	Comp.	Honorary
First	96				2
Second	32		1		1
Third	78			1	4
Fourth	60		1		3
Fifth	9				1
Sixth	76		1		7
Seventh	35		1		3
Eighth	17				
Ninth	23				4
Tenth	10				
	436		4	1	25

1963—Total Membership 414

District	Regular	Retired	Limited	Comp.	Honorary
First	90				2
Second	34		1		3
Third	55		1		2
Fourth	42				2
Fifth	7				1
Sixth	77	1		1	5
Seventh	34	1			2
Eighth	18				
Ninth	22				4
Tenth	9				
	388	2	2	1	21

A.M.A. GENERAL MEMBERSHIPS

	1962	April 12, 1963
First	94	90
Second	34	37
Third	82	53
Fourth	60	44
Fifth	10	8
Sixth	82	82
Seventh	38	37
Eighth	17	17
Ninth	25	26
Tenth	9	8
	451	402

Representation in the House of Delegates is based on 1 delegate for each 15 paid-up members (or major fraction thereof), together with honorary members. Delegates from the local societies should be seated on this basis, so it is essential that dues be forwarded promptly.

The continued cooperation on the part of all members will be greatly appreciated.

W. M. Buckingham, M.D., Secretary

REPORT OF THE EXECUTIVE SECRETARY

GENERAL COMMENTS: Your executive secretary attended several state, regional, and national meetings in behalf of the association.

This year we celebrate the seventy-sixth birthday of the association. Your executive secretary began his twelfth year as of February 18, 1963. Mrs. Margaret Fremming, office secretary, began her thirteenth year with the association. Mr. Daniel E. Buchanan, director of communications, came to us on October 1, 1961, and is showing steady progress. Mrs. Myrtle Kohler, office assistant, joined us in March, 1962.

The routine of the headquarters office continues to show an increased tempo as each year passes. This increase is due to increased emphasis in the areas of medical economics, legislation, medicare, public relations, State Board of Medical Examiners duties and general services to the members.

LEGISLATION: Our greatest effort in this area was on the state level during January, February, and March of this year. It is believed by this writer that the thirty-eighth legislative assembly was one of the most difficult ones in which to lobby. Regardless of this fact, the association's positive legislative program did not fare too badly. H.B. 698 (poison control), H.B. 720 (professional corporations), H.B. 768 (cancer quackery) and H.C.R. "S" (L.R.C. study of welfare programs) were supported by the association and passed. Please note the report from the Committee on Legislation for the complete listing of legislation followed during this past session. The members of this association and the woman's auxiliary who visited the legislature and contacted their senators and representatives are to be commended for their efforts.

The thirty-eight legislative assembly was fortunate in having among its membership a doctor of medicine (Senator James H. Mahoney of Devils Lake), who is a member of this association. It has been many years since a doctor of medicine served in the state legislature.

During the spring and summer of 1962, we were very busy on the national scene in combating the attempts of the Kennedy administration to pass the King-Anderson proposal. Organized medicine and its allies were successful in this struggle. We find ourselves in 1963 once again confronted with the Kennedy compulsory health care plan in H.R. 3920. It was introduced on February 21 by Congressman King of California and was referred to the House Ways and Means Committee. The Senate counterpart, S. 880, was introduced by Senator Anderson of New Mexico. In most respects, these measures are similar to the bill rejected by the Senate late in 1962. As you all know, we won a battle in 1962, but the war continues and our efforts to win the war cannot be allowed to falter. We must continue the struggle until victory is achieved.

PUBLIC RELATIONS: Mr. Daniel E. Buchanan was employed by the council on October 1, 1961, and has been assigned to this area of the association's operations. It is this writer's opinion that progress is being made in this field of our endeavors. Mr. Buchanan is to be commended for his work in up-dating the association pamphlet entitled, *The Positive Program of Health Legislation*. Mr. Buchanan will be stepping-up his efforts in the field of personal contacts with individuals throughout the state. Last summer and fall he called on several newspaper editors, radio and TV personnel, public health nurses, county public welfare board executive directors, and members of this association. It is most important in the field of public relations that these personal contacts be made and maintained.

The emergency first aid station maintained during the past legislative session by this association was good public relations and aided in making legislative contacts as well. It is hoped that during the 1965 legislative session we will have more out-of-town physicians manning the first aid station. The Bismarck physicians are to be highly commended for providing the greater share of manpower in staffing the first aid station.

Our relationship with Blue Shield remains strong in the area of public information and education.

PHYSICIANS' PLACEMENT SERVICE: This office continues to give service to communities and medical groups in seeking physicians.

U.N.D. MEDICAL SCHOOL SCHOLARSHIPS: The

1962 winners of the association's scholarship prizes (totalling $500) offered at the school of medicine were as follows: Anatomy, Milo L. Johnson and Cecil H. Chally; physiology and pharmacology, Robert J. Bache; microbiology, John W. Reiter; pathology, George R. Ward; highest scholastic average, first year, Cecil H. Chally.

FINANCE: The treasurer's report continues to show an improved balance. The goal of having one year's operating budget in reserve was maintained last year when you consider the certificate of deposit in the headquarter's office account. It is hoped that this reserve can be kept at this level, as it should be, in the interests of good business practice.

Receipt of dues continued to be slow, as noted in the secretary's report.

MEDICARE: The Dependents' Medical Care Program (Medicare) commenced on December 7, 1956. Up to January 1, 1963, 7,560 claims had been processed by this office. The total sum paid to North Dakota physicians as of December 31, 1962, amounted to $603,228. Each claim averages $79.53.

THOUGHTS FOR THE FUTURE:

1. Greater interest should be shown in the legislative sessions held in Bismarck every two years. This interest can be evidenced by members coming to Bismarck to visit and testify before committee hearings.

2. In our public relations program, thought must be given to securing additional allies to aid in combating the continued growth of the welfare state philosophy.

3. Consideration should be given to the appointment of a Committee on Committees to review the several committees of the association with the thought of possibly instituting the commission mechanism to aid in improving committee activities.

4. Interest should remain high in the field of national legislation affecting organized medicine.

5. Plans should be made shortly so that a positive program on health legislation will be ready for presentation to the next (thirty-ninth) legislative assembly in January, 1965.

ACKNOWLEDGMENTS: Your executive secretary wishes to express his sincere appreciation to our president, E. J. Larson, M.D., for his efforts in behalf of this association. Dr. Larson made many trips both in and out of the state on association business.

My sincere thanks also go to those other members with whom this writer has had occasion to work this past year on committee assignments and the several other programs of the association.

Lyle A. Limond, Executive Secretary

REPORT OF THE CHAIRMAN OF THE COUNCIL

The first session of the spring meeting of the North Dakota State Medical Association convened at 10:00 A.M., June 2, 1962, in Bismarck, North Dakota.

Dr. V. G. Borland, chairman of the council, called the meeting to order. All members of the council were present. Others present were Drs. E. H. Boerth, E. J. Larson, Amos Gilsdorf, L. A. Christoferson, W. M. Buckingham, R. D. Nierling, Mr. Lyle Limond, and Mr. Daniel Buchanan. The minutes of the previous sessions as printed in the council agenda book were accepted as printed.

Dr. E. J. Larson and Dr. R. D. Nierling reported that they had, as requested at the meeting in 1961, checked into the possibility of investing bonds that are close to maturity. They were advised by the bankers that nothing would be gained by investing these.

The chronic problem of delinquent dues was discussed. Dr. Buckingham, secretary of the association, was instructed to follow strictly the rule that only delegates who are properly certified and are representing the paid-in-full members of their district societies are to be seated in the House of Delegates.

The subject of resolutions required a lengthy discussion which terminated in several final resolutions which were submitted to the House of Delegates for its consideration.

1. The Bauer resolution.

2. Resolution opposing the King-Anderson Bill.

3. Resolution opposing Senate bill 1552 concerning the Food and Drug Administration. Details of this can all be found in the Handbook.

4. Resolution commending Dr. Leonard Larson for his excellent work during his term as president of the American Medical Association.

5. Resolution expressing thanks for the assistance of the personnel of the Chicago and Washington, D. C., offices of the American Medical Association during the congressional hearings on the King-Anderson Bill in July and August of 1961.

6. Resolution thanking, saluting, and commending Dr. Edward R. Annis, Miami, Florida, for his zeal and perseverance in advancing the cause of private medicine. Copies of this resolution were forwarded to Dr. Annis and members of the Board of Trustees of the American Medical Association.

These constituted the major resolutions. The others may be found in the Handbook.

Dr. Peters read a letter which Mr. Limond received from the chairman on medical service of the American Medical Association mentioning and commending Dr. W. A. Wright for his contributions to the council and asking that their expression of appreciation of Dr. Wright's contributions be relayed to the officers and members of the North Dakota State Medical Association.

Dr. Peters moved that a resolution be submitted to the House of Delegates commending Dr. Wright and that this letter be made a part of the minutes of this meeting. Dr. Craven seconded the motion; motion passed unanimously.

Dr. Borland brought to the attention of the councillors a letter received from John C. Foster, executive secretary of the South Dakota State Medical Association. The letter was in the form of a questionnaire. After discussing this, it was decided to answer this questionnaire as follows: (1) Has your state society taken any official action on the American Medical Association's recommendations on medical discipline? Answer: no; (2) Does your society feel that the American Medical Association should have original jurisdiction for medical discipline in cases brought to its attention? Answer: no; (3) Does your society feel that the American Medical Association should have original jurisdiction in cases where medical disciplinary bodies at the local and state level have failed to act? Answer: yes; (4) Does your society approve the creation of an informational clearing house on medical discipline at the American Medical Association level? Answer: yes.

Dr. Borland brought up the question of printing some new relative-value fee schedules. It was felt that the council should not have to worry about this as this was entirely a matter in the hands of the Medical Economics Committee.

The matter of the hospital-use survey was discussed. The Blue Cross board would be willing to spend $2,000 for a statistician from the American Medical Association to evaluate this material with the idea that, if the physicians could get some good information from this survey, they would go ahead with the survey. Dr. Christoferson felt that this should be carried on and urged a statistical analysis of this date. The meeting was adjourned at 12:00 P.M. The council reconvened at 1:30 P.M. All councillors were present. Guests present were Dr. E. J. Larson, Dr. Lee Christoferson, Dr. R. D. Nierling, Dr. E. H. Boerth, Dr. W. A. Wright, Dr. C. J. Glaspel, Dr. Amos Gilsdorf, Dr. W. M. Buckingham, Mr. Lyle Limond, and Mr. Daniel Buchanan.

Dr. Woutat gave his report on the book, *Medical Milestones.* He thought that Mr. Robinson, associate professor at the University of North Dakota, would be free in September to go over our information and would be interested in working with a committee to possibly finish the book. Dr. Woutat suggested that the incoming president appoint an interested committee to work with Mr. Robinson and to make decisions such as how far to go dollar-wise and how much material he should have access to. Dr. Borland agreed this would be the proper course to take and hoped that the council would hear something from Mr. Robinson at the meeting in December.

Dr. Borland asked for a discussion on the matter of Senator Burdick's misquoting the number of people receiving treatment under the Kerr-Mills Bill in North Dakota. It was agreed that an open letter should be published to refute Senator Burdick's statement. Mr. Daniel Buchanan was instructed to draw up such a letter under the advisement of Dr. Peters in the form of a news release for the public.

Dr. E. J. Larson brought up the problem of certain insurance agents pressuring patients to drop hospital insurance which they now carry and take out hospitalization in their companies. Mr. Limond was instructed to write a letter from the state medical association to the insurance commissioner protesting this practice.

A letter was read from Dr. James R. Amos regarding poliomyelitis vaccine and was referred to the Committee on Maternal and Child Welfare.

The meeting adjourned at 3:00 P.M. to reconvene Sunday afternoon after the meeting of the House of Delegates.

SECOND SESSION

The meeting was called to order at 4:30 P.M., June 3. Dr. Borland and Dr. Woutat had indicated to the Nominating Committee of the House of Delegates that they wished to be relieved of the responsibility of being on the council. Therefore, Dr. Toomey, as vice-chairman of the council, conducted the meeting.

All Councillors were present. Guests attending were Drs. E. J. Larson, E. H. Boerth, A. R. Gilsdorf, W. M. Buckingham, and R. D. Nierling. Also present were Mr. Lyle Limond and Mr. Daniel Buchanan.

Mr. Limond asked that he be allowed to use his judgment in contracting for the printing of programs in the future, regardless of bids. Dr. Peters made a motion, which was seconded and passed, that Mr. Limond be allowed to contract for this printing with the company which he felt was the best one and who best served our interests.

There were no requests or items for consideration from the House of Delegates.

Dr. Toomey called for the election of officers. The following officers were elected: chairman of the council, Dr. G. W. Toomey; vice-chairman of the council, Dr. Tom Pederson; secretary, Dr. Clifford Peters; executive committee of the council to consist of the chairman, vice-chairman, and secretary.

As Dr. Craven was elected to the office of second vice-president of the North Dakota State Medical Association, thereby removing him from the Council, Dr. Boerth nominated Dr. Dean Strinden of Williston for councillor from that district to fill the unexpired term of Dr. Craven. Dr. Strinden was duly elected unanimously. It was moved, seconded, and passed that the interim meeting be held December 8 at Fargo, North Dakota, beginning at 10:00 A.M.

There being no further business, Dr. Mahowald moved for adjournment. The motion was seconded and passed and the meeting adjourned at 5:00 P.M.

INTERIM MEETING

An interim council meeting was held Saturday, December 8, 1962, at the Gardner Hotel, Fargo, North Dakota.

The executive committee met Friday, December 7, to go over the budget material, thus expediting the business at the morning meeting. The meeting was called to order at 10:00 A.M. by Dr. Glenn W. Toomey, chairman. All members were present except Keith Foster, M.D., councillor, Southwestern District, and R. D. Nierling, M.D., treasurer. Others present were Drs. E. J. Larson, Amos Gilsdorf, William Buckingham, J. D. Craven, Lee Christoferson, Mr. Lyle Limond, and Margaret Fremming.

The minutes of the meeting of June 2nd and 3rd were accepted as written in the Handbook.

The first item on the agenda was the proposed budget for the year 1963. Several increases in the budget items were explained to the members present by Dr. Peters. It was moved by Dr. T. E. Pederson and seconded by Dr. E. H. Boerth that the budget be accepted. Motion carried.

A quite lengthy discussion regarding osteopaths and doctors of medicine ensued, followed by a motion made by Dr. DeCesare that the council go on record that the matter of the osteopaths had been discussed and had been referred to the Committee on Medical Education. Dr. McLean seconded the motion and it carried.

Mr. Limond read a letter from the A. H. Robins Company, Inc., asking for approval to work with the association with the thought of furnishing an award to an outstanding physician in North Dakota for community service. This request was refused after little discussion.

Dr. Boerth next read a letter to the council of a similar nature received from *Postgraduate Medicine.* This was disposed of in the same manner as the request made by the A. H. Robins Company.

The matter of a first aid station in the Capitol during the 1963 legislative session followed. It was felt that this had great merit and it was moved, seconded, and passed that such a station be set up. It was hoped that members from outside the Bismarck area would make a special effort to visit the Capitol during the coming session of the legislature and to take their stint at the first aid station.

Mr. Limond advised the council that several North Dakota physicians who should have been honored by 50-Year Club pins and certificates had been overlooked, partly due to changes in the constitution and by-laws and partly by oversight. It was decided to present these pins and certificates to these members at an early meeting of their local district societies. It was felt that any physician to be so honored, however, should be given the choice of receiving this honor on the local level or at the state meeting, depending on his ability and desire to travel any great distance.

Dr. Peters reported on the hospital-utilization study. This resolved itself into the fact that the Blue Cross is to institute a national study, that the North Dakota material covering 1959 discharges is now ancient history, and that the uncompleted study should be dropped without further expenditure.

Mr. Limond advised the council that the cost of arrangements for the annual meetings was increasing each year. Many of the exhibitors had advised him that for the past four years booth attendance by the physicians had fallen off greatly. Since the exhibitors and their purchase of space greatly underwrite the expenses of these meetings, it was felt that in the future there might be fewer exhibitors and possibly not any, and financial arrangements would have to be changed. It was the general feeling of those present that inasmuch as the association is still operating in the black, and there is a surplus in the annual meeting fund, that this matter could be tabled until such a time as a deficit was incurred.

A short discussion concerning the 1963 scientific program followed. It was felt that in the future it might be good to utilize more speakers in the socioeconomic and legislative fields, with the possibility of the general public being invited to attend at least part of these meetings.

Due to the fact that the association's contract with the Veterans Administration terminated in 1955, and with the approval of the Veterans Administration Center, Fargo, it was agreed upon to dispose of all Veterans Administration records.

The meeting was recessed at 12:00 noon and reconvened at 2:00 P.M. The aforementioned councillors and officers were in attendance with the addition of Dr. G. A. Dodds, Mrs. Roger Kohler, and Mr. Daniel Buchanan.

Next on the agenda was legislation in 1963. Dr. Peters discussed the Kerr-Mills Bill and gave recommendations which were felt to be both good and timely. His recommendations were given approval by the council and referred to the Committee on Legislation.

Dr. Keith Vandergon, chairman of the Committee on Mental Health, was introduced and presented a resumé of the actions of his committee at a meeting held the previous night. Their concern was primarily with Senate Bill No. 47 which was presented to the Legislature in 1961 and which failed in the Senate. It was next recommended to the House of Delegates of the North Dakota State Medical Association in the form of a resolution and was defeated. The merits of the bill were discussed by Drs. Kohlmeyer, Samuelson, and Geib, all members of the Committee on Mental Health. It was decided that a medical advisory committee should be set up to help determine the policy of the health units provided for in this bill from a list submitted by the American Medical Association. This was seconded by Dr. Strinden and carried. These and other legislative matters were brought up that are now ancient history and there is no need to burden you with them. The record is there.

Mr. William Daner, legal counsel for the association, was next asked to discuss the code of cooperation which was drawn up by the North Dakota Hospital Association and given to the association with the request that it be studied and our comment given. There was considerable discussion, and it was felt that this code was far too complicated and that the Hospital Association and the doctors should get together and, with the help of the Committee on Public Relations and Mr. Daner, go over the code, make revisions, and bring this up later.

Other bills referred to the Committee on Legislation were North Dakota Professional Corporation Act and an act relating to the treatment or cure of cancer.

Recommendations for legislation concerning crippled Children: Recommendation No. 1 was approved by the council, namely that the legislature submit a bill calling for individual counties to contribute 10 per cent of the cost of Crippled Children's Services incurred by their respective residents. The council directed a letter to the Public Welfare Board and Blue Cross that the association is concerned and would like some explanation regarding the inequities in the Crippled Children's Services reimbursement formula concerning hospital coverage.

Mr. Buchanan presented a resumé of a telephone conversation with Dean Harwood concerning the "Forgiveness Clause of the Medical Center Loan Act," requesting that it be amended to include physicians who return to North Dakota for internships, residencies, or who accept teaching positions at the school of medicine. It was moved, seconded, and passed that the council endorse the report of the Committee on Medical Education and that it be referred to the Committee on Legislation.

Dinner recess was held at 5:30 P.M. At the dinner, Dr. E. J. Larson, president, addressed the group.

All councillors were present. Others present were Drs. E. J. Larson, W. M. Buckingham, J. D. Craven, and A. R. Gilsdorf; Mr. William Daner, Mr. Lyle A. Limond, Mrs. Myrtle Kohler, and Mr. Daniel Buchanan.

Considerable discussion again centered around Senate bill No. 47. This resolved itself briefly in a decision to have the Committee on Mental Health work with the Committee on Legislation and formulate a bill which would be acceptable to the association.

Again, the matter of delinquent dues was brought up; Dr. W. M. Buckingham pointed out that it was necessary to refuse to seat several delegates from the Northwest District Society during the 1962 sessions because of delinquent dues.

As an outgrowth of discussion which began during the dinner hour and concerned the role of the American Medical Association delegate and the district medical society, Dr. Naegeli moved that the council recommend the formation of an "American Medical Association Caravan" composed of the American Medical Association delegate, American Medical Association representative, the state association president, and state association representatives who would travel to each of the district societies, presenting an appropriate program. He suggested that the proposed caravan be patterned after the present Cancer Caravan. The motion was seconded and carried.

Dr. Peters spoke regarding the association's role on the steering committee which underwrites and directs Greater North Dakota's weekly TV series, "Progress—North Dakota." He felt that the association had been rewarded many times for the little money it contributed to this, and council support was granted for the association's continuance in co-sponsoring "Progress—North Dakota" in 1963.

The Council was informed of a request from the Board of Higher Education and Dr. C. P. Lura, President, Minot State Teachers College, for the Executive Committee of the Council to give its opinion on the curriculum offered at the Teachers College in Medical Technology. At that time, students completing the course at Minot were unable to receive a degree. For that reason, the association's opinion had been solicited with regard to the medical technology program. The Executive Committee met in Minot in early January and reviewed the school, the curriculum and equipment, and interviewed the instructors. It was the feeling of the Executive Committee that this school met all the requirements and that they were carrying on a program which fulfills a very definite need in that area. It was also pointed out that this program could be carried on without any increase in the budget of the Minot State Teachers College. The board gave its unanimous opinion in favor of the School of Medical Technology, Minot State Teachers College, being approved. Mr. Limond was instructed to correspond with the Board of Higher Education regarding this and our decision. The Board gave its approval and a degree is now being given by the college.

Early in October of 1962 the Executive Committee of the council submitted 3 names to Governor Guy for the vacancy on the State Health Council, since Dr. M. S. Jacobson's term had expired. This was necessary because the House of Delegates in June had submitted only Dr. Jacobson's name. The Executive Committee submitted the following names: M. S. Jacobson, M.D., Elgin; Percy L. Owens, M.D., Bismarck; and Russell O. Saxvik, M.D., Bismarck. This satisfied the Governor, and he then appointed Dr. Owens to the State Health Council. Dr. Toomey appointed Drs. R. E. Mahowald and T. E. Pederson to serve as representatives of the council on the board of directors of the North Dakota Physicians Service.

Considerable time was used discussing the Committee on Professional Liability. Mr. Daner resolved this by mentioning that the committee, when properly used, could offset many well-intentioned but ill-advised malpractice lawsuits. The consensus of the council was to keep the Committee on Professional Liability active and to have this committee work in conjunction with the association attorney, Mr. Daner.

Dr. Mahowald read a letter expressing disapproval of the physicians of the Third District Medical Society with the proposed 20/80 clause pertaining to outpatient, laboratory, and x-ray work being offered by Blue Shield. The council took no action with regard to the new clause; however, a suggestion was made that perhaps Blue Shield might better reimburse the patient on 80/20 basis after the patient himself had paid the doctor.

Dr. Toomey entertained a motion for adjournment. It was moved by Dr. McLean that the interim session of the council be adjourned. Dr. Naegeli seconded the motion. The meeting was adjourned at 9:45 P.M.

G. W. TOOMEY, M.D., Chairman of the Council

REPORTS OF COUNCILLORS

First District

During the last fiscal year, March, 1962, through February, 1963, the First District Medical Society held 8 meetings. The first meeting was on March 27, 1962, at the Gardner Hotel, Fargo. This meeting was called to order by the president, Dr. C. M. Hunter. There was no scientific program at this meeting, since it was a business meeting. The Rev. Ted Jones, Bismarck, presented a proposed retirement housing project to be erected by the Episcopal Church at Bismarck, called "Wheatlands." The minutes were read and approved at this meeting, and Dr. Robert Geston of West Fargo was elected to membership. Reports on the following committees were held: Public Health Committee, by Dr. Lawrence; Public Relations Committee; Medical Economics Committee; and Committee on Legislation. The meeting adjourned at 9:00 P.M.

The next regular meeting of the First District Medical Society was May 11 at the Biltmore Motel, Fargo. This meeting was also called to order by the president, Dr. C. M. Hunter. The minutes of the previous meeting were read and approved. Dr. R. J. Ulmer gave a short report on the speakers bureau, and Dr. Lee Christoferson reported on the Public Relations Committee. The scientific program was a lecture given by Dr. David Karnovsky on "Cancer Chemotherapy and Research."

The next meeting was September 27, 1962, at the Town House Motel, Fargo. The meeting was called to order by the vice-president, Dr. F. M. Melton. Mr. Lyle Limond and Mr. Daniel Buchanan were guests along with Dr. John Swenson of Jamestown. The applications of Dr. Joseph W. Miller, Dr. Richard H. Seifert, and Dr. James B. Wenzel, all of Fargo, were given their first reading. Dr. Ulmer reported on the Committee on Legislation, and the Public Health Committee report was given by Dr. Lawrence. The question of sponsoring oral polio vaccine clinics was discussed in quite some detail and it was moved, seconded, and passed that the First District Medical Society go on record in approving mass polio clinics for the Fargo-Moorhead area. Dr. Kulland requested that the First District Society co-sponsor a meeting on Saturday, March 16, 1963, with the Lederle Company and the North Dakota Chapter of the American Academy of General Practice. Approved. Dr. John Swenson read an address from the president, Dr. E. J. Larson, whom he represented. Following his address, which was warmly and cordially received, he then spoke as chairman of the State Public Relations Committee on the role of the doctor and public relations in the state. He introduced Mr. Daniel E. Buchanan, who is the director of public information and education for the state medical association.

The next monthly meeting of the First District Medical Society was October 25, 1962, at the Town House Motel, Fargo. This was the annual Darrow-Long lectureship sponsored by the Dakota Medical Foundation. No business was transacted at this meeting. The speaker and guest of honor was Dr. Donald Cassels, Chicago, Illinois, who spoke on the "Aortic Arch Syndromes." He gave a very interesting paper which was well received and answered many questions from the floor after his presentation.

The next meeting was held on November 27 at the Biltmore Motel, Fargo. At this meeting, Dr. Lawrence Pray discussed the First National Congress on Mental Illness and Health which he attended in Chicago. He introduced Prof. Gayle Arness, who spoke briefly on proposed community mental health clinics. Some discussion was entered into concerning the setting up of community mental health clinics, and endorsement was asked from the First District Medical Society for this project. Motion was made and seconded, but the motion did not pass. A new motion by Dr. Ulmer to table the motion was passed by a vote of 26 to 17. Edward L. Sypnieski, Executive Director, North Dakota Tuberculosis and Health Association, spoke briefly on the recent policy changes of the association, and said that the TB Association had begun tuberculosis testing programs in schools, as well as in high reactor areas.

The scientific program for the evening consisted of a speech by Dr. R. K. Winklemann of the Mayo Clinic. He was introduced by Dr. Kavanaugh, and his paper was titled "Syndromes Associated with Vasculitis." After the scientific program, there was the regular business meeting and, at this time, the membership applications of Drs. Seifert, Wenzel, and Miller were given their second reading, and Dr. James Madison of Fargo had a first reading. Dr. Lawrence reported for the Public Health Committee and Dr. Lancaster spoke for the Medical Education Committee. A Nominating Committee was selected and was composed of Drs. Williams, Webster, and Schneider, and they proposed as their slate of officers: president, Dr. Frank Melton; vice-president, Dr. Les Wold; and secretary-treasurer, Dr. Richard Zauner, all of Fargo.

Delegates to the state convention were Drs. A. C. Burt, J. Houghton, H. Norum, J. Murray, and G. H. Hall; alternates were Drs. C. M. Hunter, D. H. Lawrence, W. L. Macaulay, J. S. Gillam, B. F. Amidon, and Marshall Landa.

The annual Christmas meeting was December 18, 1962, at the Gardner Hotel, Fargo. Mr. Maynard Helmeke, accountant, gave a short talk on the Keogh Bill, entertainment, and travel deductions for physicians. This was a very interesting talk. Following this talk, the secretary announced that the dues for the coming year would be $165. Dr. Barnard suggested that AMPAC and COMPACT statements be sent with the bills for dues. Drs. James Wenzel, Richard Seifert, and Joseph Miller were elected to membership in the First District Medical Society. The slate of officers was presented by the Nominating Committee. Dr. Wenz moved that the slate be unanimously elected. Dr. Engstrom seconded the motion and there were no dissenting votes. The meeting adjourned at 9:15 P.M.

The next meeting of the First District Medical Society was January 29, 1963, at the Gardner Hotel, Fargo, and was called to order by the president, Dr. Frank Melton. The minutes of the preceding meeting were read and approved. The financial statement was also presented. The application for Dr. James F. Madison was given a third reading, and Dr. Madison was elected to membership in the society. The application of Dr. Richard M. Gross was read for the first time.

The scientific program consisted of a very interesting talk given by Dr. Ward Griffen of the University of Minnesota. He spoke on "The Use of Gastric Cooling and Freezing in Upper Gastrointestinal Bleeding and Duodenal Ulcer." This paper was well received and created considerable discussion at its conclusion. After the scientific program, there was a business meeting at which letters were read from the state association concerning the increase in the national American Medical Association dues; excerpts were read from the by-laws regarding payment of the dues and the number of delegates allowed for paid-up members. A letter was read from Dr. John Swenson of the Public Relations Committee urging members of the society to attend the annual Aircade for Citizenship Action. Committee reports were given by Dr. Lawrence, chairman of the Public Health Committee, and the oral polio vaccine matter was discussed. Dr. Lawrence asked for endorsement by the First District Medical Society. This endorsement was given, and the First District Medical Society was authorized to implement a polio committee and to proceed with the oral polio vaccination clinics.

A mental health committee report was given by Dr. John Magness and again the matter was brought up concerning endorsement by the First District Medical Society for approval of community mental health clinics. This motion again stirred considerable active discussion and the motion was put to a vote and was defeated. It was felt that not enough information was available to the doctors of the First District Medical Society to take a stand one way or the other. Dr. Christoferson stated that permissive legislation was going to be introduced at this legislature for community mental health clinics. Dr. Ulmer also gave a report of the State Committee on Legislation at this meeting, and Dr. Dillard invited the members of the society to the chamber of commerce legislative committee meetings on Saturday noons. The meeting was adjourned at approximately 9:30 P.M.

The last meeting during this fiscal year was held February 26, 1963, at the Gardner Hotel, Fargo. The meeting was called to order by the president, Dr. Frank Melton, and after the reading and approval of the minutes of the last meeting there was a second reading of membership application of Dr. Richard Gross. There was no correspondence to be discussed nor any new or old business. The scientific part of the program consisted of an interesting paper given by Dr. Frank Howard, Department of Neurology, Mayo Clinic, on "Neuromuscular Syndromes." His paper was well accepted and stirred a lively discussion. The meeting adjourned at approximately 9:30 P.M.

F. A. DeCesare, M.D., Councillor

Second District

The Devils Lake District Medical Society had 10 regular meetings during the year. Attendance throughout the year was excellent. Several new members were admitted to the society.

Guest speakers included: April: Dr. Ernest Schmidhofer spoke on "Promoting Mental Health." May: Dr. Wasdahl spoke on "Medical and Surgical Disease in African Races." June: The meeting was held in Rugby; at this time the councillor and delegate to the state meeting gave their reports. There was also considerable discussion regarding political problems. At this meeting, there was quite a discussion on the use of oral polio vaccine, and the matter was postponed until the first meeting in the fall. September: Dr. Amos, Director, North Dakota Public Health Service, spoke on the services offered by the Department of Public Health. October: Dr. Ernest Larson, President, North Dakota State Medical Association, visited the society and spoke regarding socialized medicine. November: Dr. Lorentson and Dr. Campbell, Grand Forks Clinic, presented a good program regarding respiratory and chest problems. December: Dr. John Lambie, sponsored by Merck, Sharp and Dohme, spoke on "Therapeutics of Bronchial Asthma." January, 1963: The Second District Society met with representatives from welfare boards throughout the territory. A panel discussion was held which brought out many of the doctors' problems as well as those of the secretaries of the welfare boards. It was felt that such a program would be valuable to all the societies in the state. February: Dr. Miland Knapp spoke on "Stroke Rehabilitation." March: Dr. A. S. Rabeau, Aberdeen Indian area, spoke on the "Historical Report of Indian Problems."

At the April meeting, a resolution was drawn up opposing the King-Anderson Bill, and copies were sent from the society to the congressional delegation in Washington, D. C., urging them to singly and collectively block passage of this legislation.

At the September meeting held at the Fireside Inn, Carrington, the matter of the polio vaccine was again discussed. A motion was made that clinics be sponsored on a local basis by the doctors following the principles as set down by the state Public Health Department.

At the December meeting, reports showed that the general turn-outs to the polio clinic amounted to only about 50 per cent of the population. In Cando, Rugby, and Devils Lake, there was a total of approximately 12,000 people in attendance. At this time, it was decided to hold up on the type 3 vaccine until clearance was obtained from the state Public Health Department.

At the December meeting, officers were elected for the coming year. Dr. Donald McIntyre, president; Dr. Sawchuk, vice-president; Dr. Pine, secretary-treasurer; delegates: Drs. Hilts and Seibel; alternate delegates: Drs. Chris Johnson and R. D. McBane; censor: Dr. Palmer.

Dr. Pine gave a brief report on the new services that Blue Shield was adding to its basic contract at no increase in cost to the patients; namely, diagnostic services on a co-insurance basis. Notation was also made of the dissatisfaction of some groups about implementation of this particular service.

G. W. Toomey, M.D., Councillor

Third District

The Third District Medical Society met monthly on the third Thursday of each month except May, June, and August for a total of 8 scheduled meetings for the purpose of routine business. Because the present councillor was elected at the May meeting, this report will be confined to the meetings of September to February inclusive.

On September 20, 1962, in the American Legion Club, Grafton, North Dakota, the regular monthly meeting was held with Dr. Walter L. Owens, Department of Obstetrics and Gynecology, Fargo Clinic, discussing "Diagnosis and Treatment of Cancer of the Cervix." Dr. Wallace W. Nelson then called the business meeting to order and the following matters were discussed: financial report of the treaurer; letters of appreciation from Jerry Peters of Lark, North Dakota, who won the medical student $100 award and Louis Schumock of Hillsboro for the $50 annual award at the Science Fair; progress report by Dr. Tom Schafer regarding the projected oral polio vaccine clinic; the appointment of the delegates as a grievance committee, chaired by Dr. Robert Painter, in response to a request by the state society. Drs. John A. Lambie and James R. Olson were accepted into membership of the Grand Forks District Medical Society subject to the rules of this society.

On October 18, 1962, the monthly meeting was held at the Westward Ho Motel, Grand Forks, and the program was presented by Dr. Glenn W. Fiscus, Instructor of Surgery, University of Illinois, discussing "Treatment of Chest Trauma in the Private Hospital." The business meeting was chaired by President Wallace W. Nelson, M.D., and the following business was transacted: Dr. Carl Lorentson gave the Program Committee report; Dr. Thomas Schafer gave the Alcoholism and Immunization Committee report; Dr. Robert Painter reported on the first reading of the revised constitution and by-laws with a motion these revisions be sent to each member of the Society, carried; Dr. Samuel Pettit reported for the Economics Committee; Drs. Ralph E. Leigh, Philip Woutat, and C. J. Glaspel were named to function as a Nominating Committee; Keith Vandergon discussed the establishment of a Mental Health Clinic in Grand Forks and, the society voted a minimum of $150 and a maximum of $250 to aid in starting the project; Dr. Ben Clayburgh discussed the Legislative Committee report concerning AMPAC, COMPACT, and political activities.

Dr. James Barrie of Park River, North Dakota, was accepted for membership in the society.

On November 15, 1962, the regular monthly meeting was held at the Westward Ho Motel, Grand Forks. The meeting was called to order by President Wallace W. Nelson, M.D., and the following business transacted: report of the treasurer, which was accepted as read; report on Sabin vaccine clinic by Dr. Schafer, which was considered successful with 7,300 plus feedings; discussion with further revision of the constitution and bylaws as presented by Dr. Painter, again acting as first reading and referred back to the membership for action at the next meeting.

Dr. R. Natarajan, Grand Forks, and Dr. Freeman B. Webber were accepted with membership of the society.

Dr. C. C. Wiggishoff, Assistant Professor of Urology, University of Illinois, spoke on the topic of "Renal Tumors."

On December 13, 1962, the monthly meeting was held at the Westward Ho Motel, Grand Forks. Dr. Orvar Swenson, Surgeon-in-Chief, Children's Memorial Hospital, and Professor of Surgery, Northwestern University, Chicago, spoke on "Diagnosis and Management of Prolonged Jaundice in the Newborn." His talk was well received and created lively discussion. The business meeting was chaired by President Wallace Nelson, M.D., and the following business was discussed: a letter of advisement from the North Dakota State Medical Association regarding increase of yearly AMA dues from $35 to $45 yearly; the motion of Dr. Clayburgh to include AMPAC and COMPACT dues with notification of dues on an optional basis was carried; Dr. Robert Painter presented the finalized version of the new constitution and by-laws which was approved as presented and carried.

A lengthy, heated discussion then ensued regarding a motion by Dr. Charles Porter, Grand Forks, as follows: "This society go on record as completely and totally in objection to the recent action by Blue Shield concerning 80 per cent–20 per cent coverage of laboratory fees in physicians offices and direct our representative on the board of Blue Shield to send a resolution to Blue Shield and interested parties to include the threat that some members of this society may wish to withdraw from Blue Shield unless this action is rescinded. Further, a special meeting of the Blue Shield board is to be requested on an emergency basis to reconsider this action." This motion was carried. Dr. Edgar Haunz made a motion that the president of the society contact presidents of other districts requesting a discussion in their groups in opposition to the above Blue Shield action. This was carried.

A committee of Drs. Ken Helenbolt, Harold Tarpley, Duncan Campbell, and Charles Graham, will meet with the Grand Forks Welfare Board regarding regulations and attitude toward consultation service to welfare clients.

Dr. Gerard Obert, Grand Forks, was accepted into the society by transfer from Gallia County (office) Medical Society.

Dr. Ralph E. Mahowald gave a detailed report on the state medical society council meeting held in Fargo, December 8, 1962.

On January 17, 1963, the monthly meeting of the Grand Forks District Medical Society was held at the Westward Ho Motel, Grand Forks. Dr. John F. Perry, Associate Professor of Surgery, University of Minnesota, and Chief of Surgery, Ancker Hospital, St. Paul, Minnesota, discussed "Present Concepts of Polyps of the Large Intestine" which was well received with good discussion following. The business meeting was called to order by President Wallace Nelson and the following were discussed: an invitation from Major Donald J. LaPorte of the Grand Forks Air Force Base to hold the February meeting at the new Base Hospital was read and duly accepted; Dr. Kenneth Helenbolt reported on the committee meeting with the Grand Forks Welfare Board and the request from the board for a liaison committee from the district medical society.

Dr. E. J. Larson, president of the North Dakota State Medical Association, and Dr. Glenn Toomey, president of the council, then spoke to the society with the primary emphasis on the society's controversy in Blue Shield matters.

Dr. Ralph E. Leigh, chairman of the nominating committee, presented the selected slate of candidates and the following were elected: Dr. John Graham, president; Dr. Frank Hill, president-elect; Dr. John F. Johanson, vice-president; Dr. Harold V. Evans, secretary-treasurer; and Dr. T. H. Harwood, censor; delegates: Drs. Robert Painter, John Sandmeyer, Kenneth Helenbolt, R. H. Leigh, Robert Delano, and George Countryman; alternates: Drs. William Powers, C. B. Porter, Wallace W. Nelson, Wellde Frey, Thomas Schafer, and William P. Teevens.

Dr. George Countryman summarized the December 29, 1962, Blue Shield Board of Directors special meeting, with a general discussion following. A motion was then made that this society's Blue Shield delegates be instructed to act as a committee to disseminate information concerning its attitudes regarding 80 per cent to 20 per cent coverage of laboratory and x-ray fees in the doctor's office to other district medical societies and that the work of this committee be supported by society funds. This motion was approved and carried.

Ralph E. Mahowald, M.D., Councillor

Fourth District

The Northwest District Medical Society had a successful season (May, 1962 to April, 1963). As of April 1, 1963, the Society has 61 active members and 2 honorary members. The society regrets the passing of one of its oldest Honorary members, Dr. P. A. Boyum, Harvey, North Dakota, who died on May 19, 1962.

The following physicians, who were members during 1962, left North Dakota during the past year: Drs. J. L. Floch, Mohall; and J. R. McDougall, K. M. Morrow, Raymond Vaaler, and T. M. Wilson, Minot.

The following physicians became members of the Northwest District Medical Society during the past year: Drs. T. F. Gibson, and Shellagh Milligan, Mohall; and M. H. Nazli, and B. Rioux, Minot.

The following is a summary of the meetings conducted during the past year under the guidance of the following officers: Dr. R. S. Larson, Velva, president; Dr. Ekrem Gozum, Minot, vice-president; Dr. A. M. Cameron, Minot, secretary-treasurer; Dr. L. H. Kermott, chairman of the program committee.

On May 20 and 21, this Society, along with the Bismarck and Williston Societies, sponsored 2 hour-long broadcasts by Dr. Annis over the North Dakota State Broadcasting Network. The subject of the broadcasts was "Medicare."

On May 31, the society met at the Minot Country Club and was addressed by Dr. McParland, pediatric surgeon, Minneapolis, on the subject of abdominal pain as encountered in private pediatric practice.

On July 21, 1962, the society entertained the members of its auxiliary at a social meeting at the Minot Country Club.

On September 27, 1962, the society was addressed by Dr. Walter Wasdahl, Pathologist, University of North Dakota Medical School, who spoke regarding his experiences in medical and surgical practice in Southern Rhodesia.

On October 25, 1962, Dr. Emerson of St. Paul spoke on "History and Present-day Treatment of Varicose Veins at the University of Minnesota Hospitals and Outpatient Clinics."

On November 29, 1962, the society met at the Minot Country Club and was addressed by Dr. Olmstad, University of North Dakota Medical School, who spoke on "Practical Medical Management of Various Stages of Coronary Artery Heart Disease."

On December 20, 1962, the society entertained the women's auxiliary at the Minot Country Club. The speaker of the evening was Dr. James H. M. MacIntosh, Regina, Saskatchewan, who summarized the current status of private medical practice in Saskatchewan after several months of government direction. The members of the local press were guests at this meeting.

On February 6, 1963, the society met at Gordon's Holiday Spot. The speaker of the evening was Dr. M. E. Knapp, Kenny Institute, Minneapolis, who addressed the group regarding "Rehabilitation of Patients Following Cerebrovascular Accidents." This program was sponsored by the North Dakota Heart Association.

On March 28, 1963, the society met at the Minot Country Club. The speaker of the evening was Dr. T. Chin, a research worker with the United States Public Health Service, Denver, Colorado, who spoke about "Epidemic Virus Diseases, Their Epidemiology and Treatment." At this meeting, the officers previously elected in 1962 were re-elected, and delgates were selected to represent the society at the annual meeting of the North Dakota State Medical Association in Dickinson, May 4 to 7, 1963.

During the present fiscal year, the society sponsored 3 large public clinics in Minot and surrounding territory during which polio immunization was administered in the form of Sabin vaccine; a significant percentage of the local community was thus immunized. In December, 1962, 30,291 doses of Type 1 vaccine were administered; in January, 1963, 30,845 doses of Type 2 oral polio vaccine were administered, and in February, 1963, 19,979 doses of Type 3 oral polio vaccine were administered.

F. D. Naegeli, M.D., Councillor

Fifth District

The Sheyenne Valley Medical Society held 7 dinner meetings during the fiscal year March 1962 through February 1963. The first meeting was held March 15, 1962, at which time representatives from Blue Shield were present to discuss problems as to claims and fees. Those present were Drs. O. A. Sedlak and A. C. Burt, Mr. Don Eagles and Mr. Steve Pezalla, all of Fargo. Cause for concern over increased hospital costs was discussed.

On April 18, 1962, Dr. E. H. Boerth, President of the state medical association was a special guest. He was accompanied by Mr. Lyle Limond and Mr. Daniel Buchanan. Dr. Boerth discussed various subjects including the valuable function of committees, the Corporate Practice Act, Ampac and Compact, doctors as heads of departments in the state, and relations between doctors and the Workmen's Compensation Bureau and the State Welfare Board.

The next meeting was held May 16, 1962. Guest speaker was Dr. Albert F. Samuelson, psychiatrist, Bismarck, North Dakota, who gave a very interesting talk on "Office Management of the Neurotic Patient." He stressed recognition, care, and treatment.

No summer meetings were held.

On September 19, 1962, Dr. Robert Seifert, urologist, Fargo, North Dakota, presented an informative paper on "Benign Prostatic Hypertrophy."

On October 17, 1962, we were again honored by having as our speaker, Dr. E. J. Larson, the newly elected president of the state medical association. He was accompanied by Dr. John Swenson, Jamestown, and Mr. Lyle Limond and Mr. Daniel Buchanan. Dr. Larson spoke on "The Role of the State Association in the Affairs of the State."

The next meeting was held December 19, 1962, when we had as our guest and speaker, Mr. Sypnieski, state director of the tuberculosis association. He spoke on the role of the association and its present program, stressing case finding and research.

We had no scientific program at our January 18, 1963, meeting. However, the following officers for the ensuing year were elected: Dr. Warren Jensen, president; Dr. Clayton E. Jensen, vice-president; Dr. C. J. Klein, secretary-treasurer; Dr. Neil Macdonald, delegate; and Dr. C. J. Klein, alternate.

On February 5, 1963, our program was sponsored by the North Dakota Heart Association and featured Dr. Raymond Anderson, University of Minnesota, speaking on "Congenital Heart Defects and Their Management." Dr. A. E. Van Vranken and Dr. G. A. Skelly of Cooperstown, North Dakota, were guests.

Sheyenne Valley Society sponsored 3 Sabin polio vaccine clinics. The fifth district now has a total active membership of 8 with 1 retired.

G. Christianson, M.D., Councillor

Sixth District

The following meetings were held in the Sixth District during the interim since the last report to the State Medical Association: April 3, 1962: The program consisted of Dr. Annis' film entitled "Where is Medicine Going" and the Cancer Society film "Life Story." Drs. Joseph A. Hilts, Mandan, James E. Forsythe, Albert H. Fortman, John B. Frankel, and James R. Amos, all of Bismarck, were voted to membership in the Sixth District Medical Society. At this meeting it was also decided to place public relations ads in local newspapers to point out medicine's position in medical care legislation.

On April 30, 1962, Dr. Edith Potter, Department of Obstetrics and Gynecology, Chicago Lying-in Hospital, spoke on "The Role of the Liver in Perinatal Mortality." At this meeting, Dr. Wayne H. Pitcher, Bismarck, was voted to membership through transfer. Dr. M. A. K. Lommen was elected as an alternate to the House of Delegates. Much activity was generated in opposition to the King-Anderson Bill, and opposition was expressed through resolutions and personal letters; many individuals spoke before various organizations opposing this legislation.

The next meeting was held December 18, 1962. At this meeting, many members of both the House and Senate of the state legislature were guests of the society and were introduced by our legislative chairman, Dr. Phil Dahl. At the same meeting, Drs. Gerd Fischer and Roger Fricke, Bismarck, were elected to membership. The transfer of Dr. S. J. Thakor from the Stutsman County Medical Society was approved. A lengthy discussion was held at this time on the new Blue Shield contracts paying 80 per cent of diagnostic services for laboratory and x-rays in the physician's office. No action was taken, but the matter was tabled, as it was felt that this was a matter for the board of directors of Blue Shield to decide. The following new officers were elected for the coming year: Dr. M. A. K. Lommen, president; Dr. O. V. Lindelow, vice-president; Dr. R. W. Pierson, secretary-treasurer; Dr. R. W. Henderson, censor, term ending 1965; Dr. M. E. Nugent, House of Delegates, term ending 1965; Dr. R. B. Tudor, House of Delegates, term ending 1965; Dr. M. A. K. Lommen, House of Delegates, term ending 1965; Dr. Edmund Vinje, Board of Directors, North Dakota Physicians Service.

The next meeting was on January 15, 1963, at which time Dr. E. J. Larson, President, North Dakota Medical Association, spoke on what the American Medical Association has done in carrying out its obligation to the medical profession and stated that this is a true example of democracy in action. He emphasized that the American Medical Association is a crusader for advancement of the art and science of medicine. Dr. Larson stressed that all doctors should support local medical societies and national associations.

Dr. William Menninger, President, Menninger Foundation; member of the Board of Regents, National Psychiatric Association; and member of the Board of the American College of Psychiatrists, was introduced as the main speaker of the evening. Dr. Menninger spoke on "Psychiatry and Its Challenge Today." He traced the beginning of psychiatry from the early times to the present day. He stressed the importance of encouragement of our legislature to provide more funds in order to organize better psychiatric care for patients.

The last meeting was held on February 17, 1963, at which time Dr. Raymond Anderson, University of Minnesota, spoke on "Congenital Heart Disease." At this meeting, Dr. Howard Gray, Bismarck, and Dr. F. D. McDade, Turtle Lake, were accepted into membership.

Throughout the year, the Sixth District has been fortunate in having a very favorable turnout at most of its meetings; from 40 to 65 individuals have been in attendance at each session. Membership in the district is as follows: Active members, 76; limited basis members, 1; honorary members, 7. We gained 10 new members. The following 3 members passed away during the year: Dr. E. P. Quain, Dr. W. H. Bodenstab, and Dr. Cecil Smith.

C. H. Peters, M.D., Councillor

Seventh District

Since the last report, 6 dinner meetings have been held. The first meeting was April 26, 1962, with 20 members in attendance and 8 guests from the state hospital and out-of-city present. At this time, the society approved co-sponsoring, with the Valley City physicians, the Dr. Annis film, "Where is Medicine Going?", over Channel 4 TV. There was staff discussion relative to the welfare board, Medical Assistance to the Aged, and Old Age Assistance, as well as discussion of the cancer program in the county, legislative activities, and public relations activities in general. The scientific program was presented by Dr. Robert Kyle, Hematologist from the Mayo Clinic, who spoke on the subject, "Leukemia."

The second meeting was September 13, 1962, with 26 members present and 4 out-of-city guests. There was discussion of the proposed polio clinics. The program was introduced by Dr. John Gillam of Fargo and consisted of a well-organized presentation by Dr. George Moore, Chief of the Roswell Park Memorial Institute, Buffalo, New York, referable to activities in cancer research and cancer treatment.

The third meeting was October 25, 1962, with 22 members present and 6 guests. Mr. Sypnieski, Executive Director, North Dakota Tuberculosis and Health Association, mentioned changes in x-ray and skin testing that have taken place in the organization during the past year. There was much discussion referable to legislative activities regarding the oncoming elections, and the program concluded with a film of the American Medical Association convention at Chicago in June, 1962.

The next meeting was January 17, 1963. This meeting was held at the state hospital at the invitation of the superintendent and staff. There were 19 members present and 10 guests. The program was presented by Dr. Schmidhofer, who spoke on "Rebuttal of the National Institute of Mental Health Survey," and by Dr. Peter Molling, Clinical Director of the Outpatient Department. Dr. Molling read a paper on "Impact of Perphenazine and Placebos in Committed Delinquents." This was followed by a paper presented by Dr. Hugh Carbone on the subject of "Pseudoneurotic Schizophrenia."

The next meeting was held February 6, 1963, with 19 members in attendance and 7 guests. Mr. Frank Brennan, Executive Director, North Dakota Heart Association, was introduced along with Dr. Van Vranken, North Dakota Public Health Department. Dr. Raymond Anderson, Associate Professor of Pediatrics, University of Minnesota Hospitals, discussed "Congenital Heart Defects." At this meeting, the officers for the year 1963 were elected and they are: Dr. John Van der Linde, president; Dr. Donald Schmidt, vice-president; Dr. R. D. Nierling, secretary-treasurer; delegates: Drs. John Elsworth and John Van der Linde; alternate delegates: Drs. D. M. Clement and J. V. Miles; three-year censor: Dr. J. J. Jestadt; two-year censor: Dr. Robert Nolan; one-year censor: Dr. Edward Hieb.

The next meeting was held March 15, 1963, with 16 members in attendance and 8 guests. This meeting was the official visitation of Dr. E. J. Larson, president of the state association. Also present at the meeting was Daniel Buchanan, State Public Relations Director. This was a very interesting meeting, and state legislative programming was discussed at length. The national legislative program was discussed, and Dr. Larson spoke on the work of the American Medical Association, the state association, and medicine's responsibility to lend greater efforts toward the recruitment of young men and women into the medical profesison.

The Seventh District Medical Society is sponsoring the oral Sabin polio vaccine clinics commencing March 17 for the 3 types through June. Our society also joins with the Cancer Committee of our district in promoting cancer detection clinics for women.

There are 36 active members in the society. New members admitted during the past year are Drs. Philip B. Curtis and Gerald Swafford, Jamestown, and Dr. Duane D. Rubbert, LaMoure. During the year, our society has lost Drs. Rioux and Thakor from the state hospital, Dr. Dayton Burkholder who moved to Wisconsin, and Dr. R. L. McFadden who passed away.

T. E. Pederson, M.D., Councillor

Eighth District

The first meeting of the Kotana District Medical Society was January 24, 1962, with 18 members of the district present. The January meeting consisted of general business and the election of officers. Dr. Milton Berg was elected president, Dr. Inness-Brown was elected vice-president, and Dr. Charles Petty was elected secretary-treasurer. During the year of 1962, we lost from our roles Dr. Sussex of Watford City and Dr. Inness-Brown of Williston. We gained 2 members when Dr. D. C. Oliver moved to Watford City and Dr. Rex Wiederanders moved to Williston and opened a practice in general surgery. The members of the Kotana District were saddened by the death of Dr. P. O. C. Johnson of Watford City.

Kotana District held 4 meetings during the year. There was a dinner meeting on April 11, 1962, at which we handled general business, most of which was related to politics. On July 9, we had another dinner meeting, entertaining our wives. At this time, there was a discussion of routine business with most of the emphasis placed on the local public relations program. On October 9, a dinner meeting was held with the wives attending, and, during this time, a discussion was held with Mr. Ed Sypnieski of the Tuberculosis and Health Association as guest speaker. We also undertook preliminary planning for the organization of oral Sabin polio vaccine clinics to be held during the winter of 1963. During the Fall of 1962, the society cooperated with the civil defense authority of Williams County in organizing and teaching a class in home medicine and civil defense.

Dean R. Strinden, M.D., Councillor

Ninth District

The Southwestern District Medical Society's 22 active members have gathered for a total of 6 meetings since the last state meeting in Bismarck. The first of these was their annual gathering in Mott in June, which was primarily a business meeting. It was fairly well agreed that a great deal of work and effort would have to be put forth by the members prior to the annual state meeting in Dickinson, May, 1963.

Another meeting in a similar vein was held for this same purpose in August 1962 and in October 1962. December 1, 1962, marked the date of the annual election of officers, and the following slate was elected for the year 1963: Dr. A. R. Gilsdorf, president; Dr. A. C. Sawchuk, vice-president; Dr. W. C. Hanewald, secretary-treasurer; delegates: Dr. W. C. Hanewald and Dr. N. B. Ordahl; alternates: Dr. R. E. Hankins and Dr. R. F. Gilliland; councillors: Drs. D. J. Reichert, Robert Thom and Richard Raasch; North Dakota Physicians Service: Drs. A. R. Gilsdorf, K. G. Foster, R. J. Dukart, W. C. Hanewald, and R. E. Hankins; and Public Relations Committee: Dr. K. G. Foster and Dr. A. R. Gilsdorf.

In February, 1963, we were pleased and honored to have Dr. Raymond Anderson, Pediatric Cardiologist, University of Minnesota, speak to us on "Congenital and Acquired Heart Disease in Infants and Children."

The meeting in March 1963 was spent almost entirely with the report of present status of the various committees and preparations for the state convention. It was felt that the majority of the particulars had been handled and that now all that was necessary would be community awareness of this convention.

K. G. Foster, M.D., Councillor

Tenth District

The Tenth District Medical Society held 4 regular meetings in 1962. These were dinner meetings followed by business and scientific sessions.

We feel that our group worked exceedingly hard both in legislative and socioeconomic fields. Material was ordered and mailed to our patients regarding King-Anderson type legislation. The materials were obtained from the American Medical Association. Much discussion was held at our meeting regarding both the status of the welfare board and Blue Shield changes.

We have noted from the letterhead from the Grand Forks District Society that Traill is listed in their district. Because of the apparent mailing to each doctor in the state from that Society concerning a controversy over Blue Shield changes, we wish to be on record that we are not a part of the Grand Forks District and do not wish to be included, since the majority of our members are not in accord with their attitude toward Blue Shield.

Our members have been active in faithfully attending the various committee meetings of which they are members and in carrying out the recommendations of the state association.

We are happy that our members voted unanimously to proceed with the Sabin oral vaccine clinics, sponsored by the Traill-Steele Medical Society. We would like to give credit to our County Public Health Nurse, Miss Agnes Thomas, who did a tremendous job. At the time of this report, we have completed clinics for all 3 types of Sabin vaccine. At a later date, a make-up clinic will be held. Public response has been exceptional.

Our society discussed AMPAC and COMPACT when COMPACT was originated in our State. It was felt at that time that COMPACT was not a bipartisan organization and, therefore, all members were not in favor of its support. We now believe that the feelings of some of our members have been justified. We feel that our state association has been hurt and that the puropse of COMPACT has been severely jeopardized in failing to support or offer any aid to a member of our own profession who was a candidate for the state senate. We congratulate Dr. James Mahoney on his election and express our appreciation for the efforts he has made in the name of medicine in our state. He helped organize and was the first president of the North Dakota Academy of General Practice and has served as chairman and as a member of important state association committees. We feel that COMPACT should be re-evaluated if it is to carry the name of medicine in our state.

In 1962 we had 2 transfers: Dr. Lars Vistnes to a residency in plastic surgery and Dr. Mervin Rosenberg to a residency in psychiatry. Dr. George A. Skellv, Cooperstown, was accepted as a new member. Dr. Waydeman, Hunter, was dropped as a member of our society for failure to pay his dues. However, he resides and practices outside of our district society and is in the jurisdiction of the First District Medical Society.

Elections were held at our December 19th meeting. New officers are as follows: Dr. Kenneth Wakefield, president; Dr. Karl Oja, vice-president; Dr. R. W. McLean, secretary-treasurer; Dr. Russell Odegard, three-year censor; Dr. Kenneth Wakefield, two-year censor; Dr. R. C. Little, one-year censor; Dr. James Little, delegate; and Dr. Kenneth Wakefield, alternate delegate.

R. W. McLean, M.D., Councillor

REPORTS OF STANDING COMMITTEES

Committee on Medical Education

The Committee on Medical Education met on November 17, 1962, at the auditorium of the School of Medicine, University of North Dakota, Grand Forks. The committee met in conjunction with the preceptors of Dr. Harwood's preceptor program for second-year medical school. The matter of seeking legislation to allow young physicians to receive credit on their medical center loans under the forgiveness clause was discussed. The idea of extending this forgiveness to physicians returning to take internships, residencies, or become instructors at the university medical school was discussed. The committee went on record as favoring this type of change in the current law. This will be brought to the attention of the Legislative Committee by the committee chairman. Dr. Harwood reported on the current status of the Medical Center Loan Fund. He stated that there is today $350,000 out to students in the third and fourth years. A student who chooses to take a residency can defer payments on his loan until the conclusion of his postgraduate work. Dr. Harwood questioned whether the loan program is succeeding in bringing doctors back to the state as it was intended by setting up the program. He recalled that in 1960, 11 loan recipients returned to the state to practice, while in 1962, only 2 returned. Neither of the 1962 returnees was required to return to the state, as is the case when a student receives the maximum of $2,500.

Should a student decide not to return to North Dakota to practice, the dean continued, he must then repay his loan at 6 per cent interest per annum. Charging 6 per cent on the money loaned was specifically written into the law as an inducement for physicians to locate in North Dakota. Dr. Harwood also noted that American Medical Association loans to medical students bear higher interest than 6 per cent and he suggested that perhaps the "forgiveness clause" could include individuals who return to the state to teach medicine or to work in institutions. The committee also learned that 30 to 35 students were applying for the medical center loans each year.

There was considerable discusison of ways in which more exceptional students could be recruited from our high schools and colleges to study medicine. Several committee members told of career days in their communities; others stressed the need for physicians to work on a personal basis with young persons of whom they had knowledge. D. E. J. Larson reminded the committee that it was primarily the medical profession's responsibility to assure that enough qualified young people enter the profession. He went on to warn that quacks and pseudo-healers would surely fill any gaps left through the absence of well-trained, dedicated new physicians.

Dean Harwood discussed the school's experience with the medical school mill levy money. He told the committee that the annual income to the medical school from the mill levy was about $683,000. At the present time (July 1, 1962), the surplus monies from mill levy funds stood at $805,000. In the past, expenses of the school have been less than the amount received from the mill levy, but Dr. Harwood noted that the future was uncertain with regard to what would be done when medical school expenses outstrip mill levy income. He also noted that there is a possibility that the mill levy will be discontinued as a step toward biennial appropriations rather than dedicated funds. Dr. Harwood commented that the school was "holding its own" with other schools, and that a good many federal research, teaching, and building grants had been acquired in recent years.

When asked if he anticipated any pressure to expand from a two to a four-year school, Dean Harwood stated the he did not, by explaining that the bottleneck in medical education is in the first two years. At the present, the dean reported, there are some 800 vacancies in the nation's third and fourth-year medical classes. The trend is toward more two-year schools, Dr. Harwood noted, and also told the committee of the need for more students, not more schools. By way of summary, Dr. Harwood noted that the University of North Dakota School of Medicine may be encouraged to increase its enrollment for first and second-year students, but that the school's being expanded to a full, four-year school is highly unlikely.

Discussion was also centered around the North Dakota State Medical Association providing additional support for the teaching program at the university, and Dr. Christoferson of Fargo suggested that the Committee on Medical Education appoint a subcommittee to work closely with the dean of the medical school to see if the physicians of the state might not take a more active part in the actual teaching program of the medical school. This matter will be discussed further between the dean and the chairman of the committee.

The meeting was concluded by remarks made by Dr. Walter Hard, Dean, Medical School, University of South Dakota, who discussed the preceptorship program in that state for preclinical medical students. Following a discussion on preceptorships, the meeting of the committee was adjourned.

At the January meeting of the State Legislative Committee, the matter of changing the laws to allow forgiveness for interns, residents, and teachers was discussed. However, that committee felt that no action should be taken at this time because it might endanger the earmarked mill levy fund for the medical school and that with the increasing difficulty of North Dakota hospitals meeting the requirements for approved internship and residency programs, the actual need for this type of change has been decreasing each year. The matter will be kept under surveillance by the Medical Education Committee and, should it be advisable, this may be brought up in future years. The next meeting of the committee will be held in conjunction with the State Medical Association at Dickinson.

R. J. Ulmer, M.D., Chairman

Committee on Necrology and Medical History

Life is too short to waste . . .
'Twill soon be dark;
Up! Mind thine own aim, and
God speed the mark!

Emerson

P. A. BOYUM, M.D.

Dr. Peter A. Boyum, 82, who started his practice of medicine in Wells County more than a half century ago, died May 19, 1962.

Dr. Boyum was born at Rushford, Minnesota, March 4, 1880. His father was a Lutheran pastor who had immigrated from Norway. Dr. Boyum attended the Red Wing, Minnesota, seminary and taught school in Fillmore County, Minnesota. His medical training was received at the University of Minnesota where he received his degree in 1907.

Following his internship at Swedish Hospital in Minneapolis, he came to North Dakota in 1908 and began practice at Manfred, Wells County. He moved to Devils Lake in 1912 and a short time later to Keene, in McKenzie County. In 1918 Dr. Boyum came back to Wells County to locate in Harvey, where he was active in medical circles until his retirement in March 1962.

He was on the staff of St. Aloisius Hospital and served as chief of staff. He was coroner of Wells County for many years. He became a member of the 50-Year Club of the North Dakota State Medical Association in 1957 and an Honorary member in 1959.

He married Manda Martinson in 1917, who survives him. Also surviving are 3 sons.

P. O. C. JOHNSON, M.D.

Dr. Peter O. C. Johnson, 79, pioneer physician at Watford City, died May 26, 1962, in his home. He became ill in Phoenix, Arizona, where he was spending the winter and was flown to Watford City by air ambulance.

He was born January 19, 1883, at Glenwood, Minnesota, and was educated in rural schools. He graduated from the Glenwood Academy, Luther College, in Decorah, Iowa, in 1906, and attended the University of North Dakota. He received his medical degree from Rush Medical College in 1915.

Dr. Johnson had served the community of Watford City since 1915. During the 1917 flu epidemic, he was on the road day and night with his team and buggy. Later, he was influential in getting a hospital in Watford City.

Active in community affairs, he was a member of the First Lutheran Church, Masonic Order, and Rotary Club. He was state representative from McKenzie County in 1926.

Dr. Johnson married Hannah Dalager in Glenwood, Minnesota, September 8, 1907, having met Miss Dalager while he was teaching high school in the Airdock and Denby areas before becoming a doctor. Mrs. Johnson survives, as do 2 daughters and 2 sons.

H. O. RUUD, M.D.

Dr. Henry O. Ruud, 72, who practiced medicine in Grand Forks from 1929 until February 1956, died July 22, 1962, at his home in Rapid City, South Dakota. He had retired from practice in Grand Forks in 1956 and lived in retirement for several years. He reopened his practice at Deadwood, South Dakota, about a year preceding his death and continued to practice until his final illness.

Born October 7, 1890, at Fosston, Minnesota, Dr. Ruud received his grade school and high school education there. He was graduated from the University of North Dakota in 1909 and in 1913 received his bachelor of science degree from the University of Minnesota. Two years later he received his doctor of medicine degree from Minnesota.

Dr. Ruud was in general practice at Alexandria, Minnesota, from 1919 until 1922. He had a teaching fellowship in eye, ear, nose, and throat at the University of Minnesota Medical School in 1922 and 1923. He had an eye, ear, nose, and throat practice at Minneapolis from 1923 until 1926, when he went to Hot Springs, South Dakota. He set up practice in 1929 with his brother, Dr. Magnus B. Ruud.

He served as first lieutenant in the medical branch of the United States Army during World War I, being stationed at Fort Riley, Kansas. He was president of the Grand Forks Rotary Club in 1941 to 1942, member of Alpha Tau Omega social fraternity, and member of Alpha Omega Alpha honorary medical fraternity. He was a past president of the Grand Forks County Medical Society and the North Dakota Academy of Ophthalmology, a member of the North Dakota State Medical

Society, and a Fellow of the American College of Surgeons. He served as surgeon for both the Northern Pacific and Great Northern Railways here.

Dr. Ruud married Ruthella Grace Taylor of Bismarck on June 11, 1919. He is survived by his wife and 1 son, Dr. Edward T. Ruud, Rapid City.

J. A. McDONALD, M.D.

Dr. John A. McDonald, 77, former pioneer resident of Bismarck but more recently of Cando, died August 14, 1962, at Devils Lake after a short illness.

He was born in the Dakota Territory in May, 1885, at Bismarck, a son of James D. and Catherine McCormick McDonald. He grew up on a farm south of there in Lincoln Township. Dr. McDonald was graduated from Bismarck High School in 1904.

He attended Marquette University in Milwaukee, Wisconsin, and was graduated from the medical school there in 1913. After his internship at St. John's Hospital at Fargo, he was licensed to practice medicine in North Dakota in 1914.

Dr. McDonald established his practice as a general practitioner in Cando in 1915 and had been active there since. A member of the Lake Region Medical Association and the North Dakota State Medical Association, he was cited in 1947 for having been the Towner County Health Officer for thirty years. He also was Cando city health officer for many years.

He is survived by his wife, 2 daughters, and 1 son.

F. O. GRONVOLD, M.D.

Dr. Frederick O. Gronvold, 83, a Fargo physician for many years, died September 3, 1962. He was born at Kenyon in Goodhue County, Minnesota, September 23, 1878.

He received his early education in the schools of Goodhue County and from a private tutor. He entered St. Olaf College, Northfield, Minnesota, in 1895 and from there he went to the Hamline University Medical School from which he graduated in 1901. Having received his license to practice medicine in Minnesota and North Dakota, the young physician settled at Gary, Minnesota, where he remained until 1906. He then came to North Dakota, practicing at Adams in Walsh County until 1913 and serving as county health officer from 1908 until leaving for Fargo in 1913. He was associated for some time, in Fargo, with Drs. William G. Brown and Paul H. Burton, with offices in the Stern Block. Several years later he set up his own offices, first at 122½ Broadway and then at 228½ Broadway. He remained at the latter location many years, then became physician for AOUW, now the Pioneer Mutual Life Insurance Company. He continued to care for his patients from his home at 910 Broadway until his retirement February 1, 1957.

Dr. Gronvold was Fargo health officer in the early 1920s, a member of the Fargo Elks Lodge, a member of Scottish Rite bodies and of El Zagal Temple of the Shrine. He was a member of the North Dakota State Medical Association for many years, becoming a member of the 50-Year Club in 1951 and an honorary member in 1952.

In his youth, Dr. Gronvold's favorite sport was baseball. He pitched for a time until "Too many doubleheaders" took their toll, and his participation in the sport became that of a spectator. His favorite recreations in later years were deer hunting and fishing.

Dr. Gronvold married Louise Marie Baasen at New Ulm, Minnesota, October 16, 1911. She preceded him in death in 1957. In 1958 he married Mrs. Ida Haugen of Fargo, who survives together with 1 son, 2 stepsons, and a stepdaughter.

JOSEPHINE S. STICKELBERGER, M.D.

Dr. Josephine S. Stickelberger, 92, died in a nursing home in St. Paul, Minnesota, September 10, 1962.

She was born at Cannon Falls, Minnesota, the former Josephine S. Lindstrom, on April 14, 1870, moving to the Dakota Territory in 1884. She began teaching school at the age of 16 in the frontier area in Nelson County. She later taught at the West Antelope School southwest of Oberon, at Buffalo, North Dakota, and at Wheatland, North Dakota. She returned to Cannon Falls at the age of 23 to finish high school. She then studied a year at Carleton College, Northfield, and later attended the University of Minnesota Medical School, receiving her degree in 1903. She was also licensed to practice medicine in North Dakota that same year.

Dr. Stickelberger returned to North Dakota, married Robert W. Stickelberger in 1906, and practiced medicine six years, then retired temporarily to raise her family. She later resumed her medical career and practiced until she was 76, at Oberon, North Dakota. A long-time member of the North Dakota State Medical Association, she became a member of the 50-Year Club in 1953 and was given an honorary membership.

In 1946 she retired and moved to St. Paul, Minnesota, living with a daughter until the time of her death. She is survived by 2 daughters and a son.

E. P. QUAIN, M.D.

Dr. Eric P. Quain, 92, co-founder of the Quain and Ramstad Clinic, Bismarck, North Dakota, and for years one of the Northwest's most famous surgeons, died September 11, 1962, at Salem, Oregon, where he had resided since his retirement in 1940.

Dr. Quain was born in Sorsjon Delarne, Sweden, August 22, 1870, of humble parentage. When he was a young man he came to the United States and located in Minneapolis, Minnesota. He worked his way through the City High School in Minneapolis and the University of Minnesota. He was graduated from the University June 2, 1898, with a medical degree. Dr. Quain came to Bismarck in May 1899, following his graduation, and received his license to practice in the state July 13, 1899. He early became associated with Dr. N. O. Ramstad who joined him in 1900 to take over the practice of Dr. Quain who had gone to Vienna, Austria, for postgraduate study. When Dr. Quain returned in 1901, the 2 men formed a partnership and became known as Quain and Ramstad. When their clinic was founded in 1905, it was the second of its kind in the United States. Among the long list of his "firsts" as a pioneer physician, researcher, and surgeon are: (1) he brought aseptic surgery to the area; (2) his clinic owned the first x-ray machine in North Dakota; (3) it was the first to acquire radium in the state; (4) he was among the first physicians in the United States to use novocain; (5) he was instrumental in locating the Bismarck Hospital in that city.

When World War I broke out, Dr. Quain was back in Vienna taking more postgraduate study. He had a difficult time getting back to this country and, when he did, he applied for military service. He was accepted in April 1917 as a major in the Medical Reserve Corps. After returning from France, Dr. Quain was Chief of Surgical Service at Fort Snelling, Minnesota, and was discharged from there in August 1919 with the rank of colonel.

He was one of the founders of the American College of Surgeons and belonged to the Western Surgical Society. He was consulting surgeon for the Soo Railroad for several years, was Bismarck's health officer and Burleigh County Coroner, a charter member of the Bismarck Rotary Club, a member of the North Dakota State Medical Association for many years, and served as its president in 1922 to 1923. He became a member of the 50-Year Club in 1948 and an honorary member in 1950.

In 1903 Dr. Quain married Dr. Fannie Dunn, one of Bismarck's pioneers. Fannie Dunn Quain died February 2, 1950. Prior to that the Quains were divorced and Dr. Quain married again in 1940. His second wife, the former Hilda Gustafson, survives. He is also survived by his daughter, Marion.

R. L. MC FADDEN, M.D.

Dr. Robert L. McFadden, 46, passed away unexpectedly on September 15, 1962, at Jamestown, North Dakota.

Dr. McFadden was born in Winnipeg, Manitoba, Canada, on October 6, 1915. He was a graduate of Winnipeg High School, recieved his bachelor's degree from the University of Manitoba, and his medical degree from Queens University, Kingston, Ontario, in 1943. He served in the Canadian Army Medical Corps until 1946 and practiced in Winnipeg, following his release, until November 1948 when he located in Jamestown. He had been associated with the DePuy-Sorkness Clinic since that time.

Dr. McFadden was an eye, ear, nose, and throat specialist and was past president of the North Dakota Academy of Eye, Ear, Nose, and Throat. He was past president of the Stutsman County Medical Society and had been a member of the North Dakota State Medical Association and the American Medical Association for many years.

He was married to Katherine Davey, December 27, 1942, at Sherbrooke, Quebec, Canada. He is survived by his wife, 1 daughter, and a son.

SAMUEL CHERNASEK, M.D.

Dr. Samuel Chernasek, 82, died October 5, 1962, at Dickinson, North Dakota, following an illness of about two years.

Dr. Chernasek was born September 28, 1880, on a farm near Hutchinson, Minnesota. He was graduated from high school at Hutchinson and then attended the University of Minnesota. After teaching chemistry in the high school at Hutchinson for three years, he decided to become a medical doctor. He returned to the University of Minnesota where he was graduated and then attended the University of Pennsylvania School of Medicine, receiving his medical degree in 1910. He had worked his way through school and graduated as a Phi Beta Kappa.

In 1913 he came to Dickinson, where he opened his office in the rear of his brother's (William) drug store on the south side of the city. Later, he moved his offices above the Service Drug Store. About 1925 he was joined by Dr. R. W. Rodgers and then by Dr. A. J. Gumper. He retired from active practice in 1948.

Dr. Chernasek was a member of the Congregational Church, the Elks Lodge, and had been a member of the Masonic Lodge for fifty-six years, having served as a past-worshipful master of the lodge and he had also served as a school board member for several years. He was a member of the North Dakota State Medical Association until the time of his retirement.

He was married to Anna Soderstrom of Little Falls, Minnesota, in 1915. Mrs. Chernasek died in 1937, and he later married Mrs. Laura Ellsworth Erdahl of Bismarck, North Dakota. He is survived by his wife, 1 daughter, and 2 sons.

W. H. BODENSTAB, M.D.

Dr. William Henry Bodenstab, 92, pioneer resident of Bismarck, died November 21, 1962. He had been in failing health for several years.

He was born June 25, 1870, at Howard's Grove, Wisconsin, the son of Julius and Frederika Bodenstab, both natives of Germany.

Dr. Bodenstab was graduated from Jefferson Medical College in Philadelphia, Pennsylvania, in 1893. Later, he studied at Heidelberg University, Germany, and at Johns Hopkins University, Baltimore. He practiced medicine in Milwaukee for two years before locating at New Salem, North Dakota, in 1898 to begin a career in medicine that was to last more than sixty years, almost half a century of it in Bismarck. For some time he was the only doctor located between Mandan and Dickinson, other than the man who was to become his father-in-law, Dr. S. O. Morgan of Glen Ullin.

He was an early associate of the Quain and Ramstad Clinic and was medical director of the Provident Life Insurance Company almost from its inception to his death. He also served as medical director for the North Dakota Workmen's Compensation Commission for twenty-eight years, from 1924 to 1952, and had acted for several years as medical supervisor for the Burleigh County Welfare Board.

Throughout life his interests were many. For many years he owned a several-thousand acre ranch some 30 miles north of Medora on the Little Missouri River. He was a Mason, a Shriner, a member of the Masonic York Rite, member of the American Legion and the Elks, and held life memberships in both the Bismarck Masonic Lodge and the Bismarck Elks Lodge. Long active in the North Dakota State Medical Association, he served as its fifteenth president in 1903 to 1904, and was the oldest member of the Sixth District Medical Association. He became a member of the 50-Year Club in 1943 and an Honorary member in 1949.

Dr. Bodenstab married Zetta Morgan on November 8, 1900. She preceded him in death. He is survived by 1 daughter, Katherine, who resides in Bismarck.

ROY LYNDE, M.D.

Dr. Roy Lynde, 88, well-known and respected physician at Ellendale, North Dakota, for more than fifty years, died November 26, 1962. He had been in failing health for several weeks.

He was born August 31, 1874, at Plano, Illinois, and in 1883 came to Forbes, North Dakota. In 1891 he went back to Illinois, taking his high school work and teaching at the same time near Plano. He returned to North Dakota at the age of 22, making the trip on a bicycle. He resided at the family home for four years and in 1901 went to Minneapolis, where he enrolled in the medical department of the University of Minnesota, graduating in the spring of 1905. Immediately upon graduation, he came back to North Dakota and established his practice in Ellendale on July 27, 1905.

Dr. Lynde was honored at numerous occasions for his deep sense of duty to everyone needing help—whether it might be night or day—and his determination to reach a patient. A man who was not expected to live because of illness in his childhod, Dr. Lynde, according to a brochure prepared in his honor, has "given more of his life to his community than most of us will ever do." In 1961 he was the subject of an article in the *Reader's Digest* in its "The Most Unforgettable Character I've Met," section. It was written by Mrs. John Rezatto, who was one of several thousand persons brought into the world by Dr. Lynde.

Dr. Lynde had never married. Three brothers and a sister preceded him in death.

C. B. DARNER, M.D.

Dr. Charles Blair Darner, 51, Head of the Department of Obstetrics and Gynecology of the Fargo Clinic, Fargo, North Dakota, died unexpectedly on February 3, 1963. His death was attributed to a heart ailment.

He was born April 2, 1911, in Wahpeton, North Dakota. His father, a paint chemist, was on the staff of the North Dakota State School of Science at Wahpeton. The family came to Fargo the next year, his father being on the staff of North Dakota State University from 1912 to 1916. They moved to Cleveland, then to Chicago, and then to Detroit. Dr. Darner spent his boyhood in these towns and was graduated from the University of Michigan in 1933 and the medical school of the same university in 1936. He interned in the university hospital, then was a resident in the hospital and did postgraduate work. He was also an instructor at the University of Michigan.

Dr. Darner moved to Fargo in 1941, joining the staff of the Fargo Clinic. He had been there since, except for three years and five months service in the Marines in World War II, being discharged with the rank of Lieutenant Commander. He was a member of Fargo Elks Lodge, the American Legion, Fargo Country Club, Phi Gamma Delta social fraternity, and Nu Sigma Nu professional fraternity. Dr. Darner was a past president of St. Luke's Hospital staff and of the North Dakota Society of Obstetrics and Gynecology and a fellow of the American College of Surgeons. His hobby was hunting.

His wife, the former Edith E. Cox whom he married July 6, 1940, survives. Also surviving are 2 daughters and a son.

C. C. SMITH, M.D.

Dr. Cecil C. Smith, 76, long-time physician in Mandan, North Dakota, and health officer of the Custer District Health Unit, died March 5, 1963.

He was born in Coon Rapids, Iowa, on July 14, 1886. He attended the State University of Iowa, Iowa City, and received his medical degree in 1910. He was licensed in North Dakota in January 1911 and began his practice in Garrison. He moved to Mandan in 1924, living there until his death. He served as a general practitioner until 1950, when he was appointed district health officer. He also served as a physician for the Northern Pacific Railroad for many years and was the school physician for the State Industrial School in Mandan from 1947 to 1959. In 1953 he was appointed director of preventive medicine in the State Health Department.

Dr. Smith was a member of the First Presbyterian Church in Mandan, a member of Mandan Lodge No. 8 A F and A M, Chapter Commandery, The El Zagel Shrine, York Rite, the American Legion, and a long-time member of the North Dakota State Medical Association and the American Medical Association. He was a member of the 50-Year Club of the association and became an honorary member in 1960.

Dr. Smith and the former Winnifred Ocheltree were married in Bayard, Iowa, on June 20, 1910. He is survived by Mrs. Smith, 1 daughter, and 2 sons.

J. H. MOORE, M.D.

Dr. John H. Moore, 68, a long-time prominent physician and surgeon at Grand Forks, North Dakota, died April 7, 1963, at Liberal, Kansas, while en route home from a vacation. Death was attributed to a heart attack.

He was born at Pembina, North Dakota, February 24, 1895. He attended the University of North Dakota and Northwestern University and received his medical degree from that school in 1917. He served in the Army in World War I, including service overseas, and came to North Dakota, where he was licensed, in January of 1920. Dr. Moore was associated with the Grand Forks Clinic and had long been prominent in Grand Forks and North Dakota medical circles. He served several years as president of the North Dakota Public Health Advisory Council and had been president of the Central Association of Obstetricians and Gynecologists. He was also a former president of the Grand Forks Clinic and a former chief of staff, St. Michael's Hospital, Grand Forks. He was a long-time member of the North Dakota State Medical Association and the American Medical Association.

He is survived by his wife and 1 daughter. One daughter preceded him in death.

E. H. Boerth, M.D., Chairman

Committee on Legislation

The dates of the meetings that we have had are comparatively irrelevant. However, we did meet in Jamestown early in the year to set up COMPACT in association with AMPAC for the state of North Dakota. Directors and officers of North Dakota COMPACT were set up at this meeting. This has been functioning comparatively satisfactorily since that date. A meeting in the fall of the year was contemplated but was not carried out. A meeting of the Legislative Committee was carried on shortly after the initial days of the meeting of the legislature, and many bills were considered at that time. Following this report is the list of the bills that were scrutinized by the North Dakota State Medical Association members. Some were supported, some were objected to, and some were watched with interest.

It is my impression that, all in all, the North Dakota State Medical Association did not fare too badly in the present legislative session. However, we did not accomplish some of the aims that we had set out to do; namely, to get the state hospital transferred to the health department or some subdivision thereof. There were other medical bills that did not fare too well, such as an advisory committee to the welfare board.

I am somewhat of the opinion that the legislature may not be totally in harmony with the thinking of the North Dakota State Medical Association. Whether this is because of a lack of public relations on our part is difficult to state.

A new phase of work and interest shown by the medical association was instituted at the present legislature, wherein at least one member of the North Dakota State Medical Association was in attendance at the legislative session every day taking care of individuals who might need medical attention as well as to show the interest of the North Dakota State Medical Association in legislative doings. This, I believe, is a step in the right direction and will indicate to many of the individuals who are politically inclined in North Dakota that we are interested in what is going on, and not only interested but actually feel that maybe some stock should be taken of suggestions that we may make. As stated before, the list of bills will be included of those that were watched. Should there be anything that anyone wishes to question, I am certain that Mr. Lyle Limond, our executive secretary, could answer any questions relative to specific bills.

The upcoming phase of Medicare in Washington indicates to us that we must still attempt to keep abreast of political medicine. It indicates to us also that we must join hands and be comparatively well organized in order to arrive at any satisfactory solution. It is necessary that we do this in order to follow through with the rest of the states on a national basis. There is contemplated in the near future a legislative meeting, which is a national meeting, to be held in Chicago this month of April. AMPAC will be having its national meeting in Chicago in May of this year after our medical association meeting is held.

The suggestions that I might have at this time to the North Dakota State Medical Association is that the Legislative Committee needs support from the component societies with just a little bit closer liaison on a basis of component parts and the state office in order to be successful in any of the programs they may wish to advance. It would be my suggestion that the House of Delegates and the council request each component society to be sure to set up a legislative committe, not by name only, but one that is active within its division and would be active not only during the legislative years but the years that are non-legislative, in trying to build up the image of the North Dakota doctor and to improve our public relations thereby.

Again, I wish to indicate that the federal government in Washington, D. C., is going to push Medicare as much as they possibly can and with many new ribbons and bouquets tied to this with a change of nomenclature in many instances to indicate that the bill is not quite as bad as it was when it was previously presented. The bill, as it is now presented, is in no wise different than it has been in the past. The only difference would be the nomenclature and the sections of the bill which now are being classified under different names than they were previously classified. The bill, essentially speaking, is very similar or the same as it was before.

O. W. Johnson, M.D., Chairman, and
P. O. Dahl, M.D., Vice-Chairman

38th Legislative Assembly

Begun and held at the Capitol in the city of Bismarck,
on Tuesday, January 8, 1963.

SENATE BILLS

2 – $263,425.13 emergency appropriation for the State School for the Blind. Followed with interest. Governor signed.

3 – $633,360 appropriation for the State School for the Deaf. Followed with interest. Governor signed.

4 – $4,237,480 appropriation for the state school at Grafton. Followed with interest. Governor signed.

5 – $1,804,768 appropriation for the Tuberculosis Sanatorium. Followed with interest. Governor signed.

6 – $7,864,464.62 appropriation for the state hospital. Followed with interest. Governor signed.

21 – $351,948 appropriation for Vocational Rehabilitation Division. Followed with interest. Governor signed.

25 – $150,000 appropriation for Children's Psychiatric Clinic. Followed with interest. Governor signed.

26 – $30,000 appropriation for the education of deaf-blind children outside of North Dakota. Followed with interest. Governor signed.

53 – Commonly referred to as the "jackpot bill," this legislation places all sales tax receipts in the general fund, to be expended pursuant to legislative appropriation. Formerly, the 2 per cent retail sales tax was dedicated 7/12 to 5/12 to education and welfare, respectively. Followed with interest. Governor signed.

58 – Provides enabling legislation for the establishment of nonprofit dental service corporations, similar to Blue Shield. Followed with interest. Governor signed.

59 – Removes the words "feeble-minded" from the name of the state school at Grafton. Followed with interest. Governor signed.

176 – Authorizes state of North Dakota, and all of its departments, to enter group hospital insurance plans. Followed with interest. Governor signed.

211 – Amendments to Medical Assistance to the Aged Enabling Act. Passage of this proposal would have broadened the eligibility requirements of the Kerr-Mills Act, as implemented in North Dakota, to include 2 additional income and net worth categories of Medical Assistance to the Aged recipients. In addition, it was designed to simplify administration of the present statute. Principal opposition was encountered from the Public Welfare Board of North Dakota, and directors of county welfare boards throughout the state. Chief allegations against SB 211 were a dislike for the concept of categories of assistance recipients and the contention that the amendments in question would present unwarranted administrative difficulty. Supported vigorously. Indefinitely postponed in Senate on recommendation of its Committee on Social Welfare and Veterans' Affairs.

224 – Provides for North Dakota's participation in an Interstate Compact on Mental Health. The measure, which involves no funds, but only machinery for the transfer of patients, was supported. Governor signed.

225 – Amendments to North Dakota's Food-Liquor Divorcement Act. Passage of this bill would have permitted, at the option of the municipality, city, or county, certain exceptions to the complete divorcement of food and alcoholic beverages in the state. Tremendous opposition to medical and other testimony was generated by the bill's opponents. In opposing SB 225, the opponents concerned themselves with the morality of the issue, and a general condemnation of what they called "the liquor traffic." Supported by Association's Committee on Legislation. Recommended for indefinite postponement by the Senate's Industry, Business and Labor Committee, the full senate concurring.

234 – Amends present law known as "Senate Bill 51," (1961) by providing that there be no charge by the state of North Dakota for treatment of tuberculosis, except that the state shall claim the insurance benefits paid to tuberculosis patients. Supported. Governor signed.

267 – Creation of a Medical Advisory Committtee to the Public Welfare Board of North Dakota would have been effected through enactment of this bill. Opposed by public welfare board and directors of county welfare boards on the basis that such a committee would have too strong a veto power; while, in effect, attempting to control the welfare department. Supported vigorously by the association. Indefinitely postponed by the senate on recommendation of Social Welfare and Veterans' Affairs Committee.

274 – Enabling legislation to allow employers to carry workmen's compensation with private insurors or with the state. Followed with interest. Passed Senate. Indefinitely postponed in the House.

320 – Transfer of Institutions. As introduced in the Senate, this bill was to transfer the state hospital, Grafton

State School, and San Haven from the State Board of Administration to the State Health Department. Amendments adopted before senate passage excluded Grafton and San Haven. On recommendation of legislators from both the House and Senate, the Committee on Legislation decided to offer an amendment to SB 320 during its hearing in house committee. The amendment, in effect, deleted everything after "a bill" in the senate-amended SB 320 and proposed, instead, modifications of the State Board of Administration, with a Council of Medical Consultants to rule on matters of medical policy, not only at the state hospital, but at all penal and charitable institutions under control of the State Board of Administration. Both the original SB 320 and the amendment to it (changing the board of administration, but allowing it to retain control of the state hospital) were killed in the House.

333 – A bill drawn to change the name of the Mental Health Authority (a division of the State Health Department) to Mental Health Division. It would also have transferred the Mental Health Division out of the State Health Department and placed it under the State Health Council, parallel to the State Health Department. Followed with great interest. Passed the Senate. Killed in the House.

340 – Designed to restrict the ownership of pharmacies by specifying inclusion of certain persons in any partnership which operates one. Followed with much interest. Governor signed.

350 – Reduces limits on claims for care at Grafton State School. Followed with interest. Killed because of H.B. 580.

Senate Concurrent Resolution WW. Introduced by majority floor leader, Don Holand, and minority floor leader, Roland Redlin. Commends the North Dakota State Medical Association for providing a physician-on-duty each day during the session. Passed by both houses and presented to Association offices. (Note—a copy of this follows this report.)

HOUSE BILLS

510 – Appropriates $12,200,792 for the Public Welfare Board of North Dakota. Followed with interest. Governor signed.

514 – Appropriates $701,360 for Workmen's Compensation Bureau. Followed with interest. Governor signed.

517 – Appropriates $53,000 for nursing scholarships. Followed with interest. Governor signed.

526 – Appropriates $634,000 for the State Health Department. Followed with interest. Governor signed.

576 – Raises from one to two years the time a nurse who received a scholarship from the state must work in a hospital within the state to cancel the cost and interest of the scholarship; provides that applicant shall have financial need. Followed with interest. Governor signed.

580 – Adds amendments to law known as "Senate Bill 51," (1961) by reducing cost for patients at Grafton State School. Followed with interest. Governor signed.

647 – Changes name of chiropodist to podiatrist. Followed with interest. Governor signed.

692 – This proposal would have required front seat belts on all new cars sold in the state, starting in 1964. Committee on Legislation supported. Killed in the House.

698 – Hazardous Substances Labeling Act. Requires specified labeling (i. e., irritant, toxic, highly toxic) for substances manufactured or repackaged in North Dakota. Also implements federal labeling law. Committee on Legislation supported fully. Signed by Governor.

720 – Permissive legislation for the incorporation of professional groups or individuals. Association supported vigorously. Governor signed.

768 – Prohibits any but a duly licensed physician to diagnose, prescribe for, or treat, cancer. Defines cancer. Association introduced and supported vigorously. Governor signed.

769 – A measure designed to expand the Mental Health Coordinating Committee through the addition of a clergyman, a teacher, a lawyer, a private practicing psychiatrist, and a physician in private practice. Supported vigorously by the association. Indefinitely postponed in the House by recommendation of its Social Welfare Committee.

813 – Enabling legislation for the establishment of community mental health service units. Based on Senate Bill 47 (1961), this legislation was acceptable to the association and its Committee on Legislation until the House passed it with the Medical Advisory Committee provisions amended out. With the Medical Advisory Committee provisions lost from HB 813, the Committee on Legislation decided to oppose it in the Senate. This bill was followed with great concern. Killed in the Senate.

828 – Repeals individual assistance programs administered by the Public Welfare Board of North Dakota and places them under one administrative roof. Chief-stated reason for the introduction of the bill, by its supporters, was to obtain additional funds from the Department of Health, Education, and Welfare for administering the several public assistance programs in North Dakota: OAA, MAA, ADC, AB, APTD (Old Age Assistance, Medical Assistance for the Aged, Aid to Dependent Children, Aid to the Blind, Aid to the Permanently and Totally Disabled). Followed with concern. Governor signed.

House Concurrent Resolution S. Would have directed Legislative Research Committee (LRC) to make interim study of North Dakota welfare laws, including eligibility requirements, and so forth. Supported vigorously. Passed and sent to the Legislative Research Committee.

House Concurrent Resolution D-1. As introduced, the measure was to repeal all dedicated funds, including the medical center mill levy, and place them into the general fund. The medical center levy was excluded by amendment before House passage. Followed with concern. Indefinitely postponed in the Senate.

House Resolution 8. Directs the speaker of the House to appoint 5 state representatives and 3 physicians to study the operation and administration of the state hospital, as presently handled under the board of administration. Followed with concern. Passed.

SENATE CONCURRENT RESOLUTION "WW"

(Holand, Redlin)

A concurrent resolution commending the North Dakota State Medical Association and several of its individual members for the excellent work done in establishing and staffing the emergency first aid station in the state capitol building, Bismarck, North Dakota, during the thirty-eighth legislative assembly.

WHEREAS, the State Medical Association provided, without charge, an emergency first aid station for the members and employees of the Thirty-eighth Legislative Assembly as well as members of the news media, lobbyists, and visitors; and

WHEREAS, individual members of the State Medical Association were in daily attendance at the State Capitol Building; and

WHEREAS, these individual physicians were ever ready to provide service;

Now, Therefore, Be It Resolved by the Senate of the State of North Dakota, the House of Representatives concurring therein:

That we commend the North Dakota State Medical Association for providing emergency first aid care for all who required it during the Thirty-eighth Legislative Assembly; and

BE IT FURTHER RESOLVED, that the secretary of the senate be instructed to send a copy of this resolution to Mr. Lyle A. Limond, Executive Secretary of the North Dakota State Medical Association.

(Signed) Stanley Saugstad,
Speaker of the House
(Signed) Gerald F. Stair,
Chief Clerk of the House
(Signed) Frank A. Wenstrom,
President of the Senate
(Signed) Howard F. Doherty,
Secretary of the Senate

Committee on Public Relations

Over the past year, your Committee on Public Relations has achieved what its chairman believes to be new highs in the general level of its activity. Coupled with that is our feeling that the committee has taken positive steps in the direction of knowing its function and the scope of its responsibilities.

It was your chairman's privilege to attend the American Medical Association Institute at Chicago last August. Theme of the two-day program was "The Public Be . . . Served." We are sure the institute, in which both physicians and lay personnel participate, is one of the finest programs of its kind. Topics covered in some detail included: addresses by Dr. George M. Fister, American Medical Association president, and Dr. F. J. L. Blasingame, American Medical Association vice-president, on organized medicine's role of service to the public; a first-hand report on the problems encountered by the profession in Saskatchewan; medicine and religion; medicine and the press; medicine's role in politics; medical societies and community health; and medical ethics and licensure. We were accompanied by Dr. E. J. Larson, state association president; Mr. Lyle A. Limond, executive secretary; and director of public information and education, Mr. Daniel E. Buchanan.

Another honor for which your chairman is most grateful was his being named the association's attendance promotion chairman for the United States Chamber of Commerce's Seventh Annual Aircade for Citizenship Action, held in Fargo on February 4, 1963. Total attendance at this day-long forum of issues before the Eighty-eighth Congress reached some 2,500. Several physicians, including lay staff from the state association and from clinics, participated in the Aircade. Our only regret, however, is that when one considers the stake which medicine has in decisions made by the Eighty-eighth Congress, no less than 10 per cent of our membership's attending the Aircade can be termed an adequate turnout by doctors.

At this point, we present the several recommendations made by the Committee on Public Relations for consideration by members of the House of Delegates:

1. We believe that basic to most of the problems of organized medicine is a lack of communication, both within the profession and to the general public. It is axiomatic, we believe, that no matter how just and correct medicine's views may be, we shall never court a favorable climate of public opinion through remaining silent. In short, our privilege to continue to practice medicine free from government control is largely dependent upon our willingness to demonstrate our faith in maintaining and improving the system under which we work—both through our actions and through our words—to patients, associates, and colleagues.

2. Your committee, its chairman, and our executive personnel at Bismarck have spent a considerable amount of time discussing ways of sustaining and improving the flow of information between the state association offices and the physicians of North Dakota. Our committee has endorsed the present newsletter format as satisfactory and believes that through committee guidance, constructive criticism from physicians, and through well-wrought innovations by our state association staff, communication between the state offices and association members can be continued and enhanced.

3. Our committee is in agreement that there be more emphasis placed on public relations activity by district societies. First, we feel there must be more information fed back to the state association offices; second, there be more utilization of public relations aids, furnished by the state association and the American Medical Association; third, that district society dues be raised to a level adequate to sustain the cost of publishing or broadcasting informational material by local mass media.

4. In the opinion of our committee, the cornerstone of a medical public relations program is ethical medical practice. We sincerely appreciate the general high tone of ethical practice by physicians in this state. We further appreciate the responsibility assumed by our council in acting as the statewide grievance committee. All of us can point with pride to the fact that physicians themselves are concerned with self-discipline and that medicine does, in fact, work to promote the continuance of high ethical standards.

5. We realize that physicians are, to perhaps a greater extent than ever before, subject to attack on the political, legislative, and socioeconomic fronts; attacks, moreover, for which our training in the science and art of medicine has not prepared us. For these reasons, we strongly urge more use of speakers and programs, both on the district and annual meeting levels, which will further educate physicians in the areas of practical politics, legislation (state and national), and socioeconomic problems.

Two projects which our committee has underway presently include revision of a proposed code of cooperation among physicians, hospitals, and news media, and the possible formation of a joint liaison committee comprised of representatives of each of medicine's allies. Thus far, only initial steps have been taken toward the realization of these projects. When it is possible to present a concrete proposal regarding either of the matters mentioned here, the appropriate policy-making body of the association will be approached by the committee.

It is our wish to commend our council for the establishment of the emergency first-aid station at the Capitol in Bismarck during the thirty-eighth legislative assembly. Morbidity, we note, could be termed rather high. We also note with great satisfaction the passage of Senate Concurrent Resolution WW commending the state association for providing medical service during the legislative session.

Other council action of which we heartily approve includes the association's participation in the Greater North Dakota Association-sponsored "Progress — North Dakota;" the forthcoming American Medical Association Caravan; the Council Digest; and the development and distribution of the 1963 edition of "The Positive Program of Health Legislation."

Our chairmanship of the Committee on Public Relations has proved to be an experience both highly informative and enriching. We were pleased to visit a number of the district societies with our state president, and we believe that more and more physicians are becoming aware of the need for still greater and more aggressive public relations activity, in all of its forms, by our district, state, and national organizations.

Our special thanks go also to Mr. Lyle A. Limond, executive secretary of the association; Mr. Daniel E. Buchanan, director of public information and education, and the staff of Mr. Limond's office, without whose splendid cooperation our job would have been most difficult indeed.

John A. Swenson, M.D., Chairman

Committee on Official Publication

The Committee on Official Publication had no matters of importance before it for the year 1962 and no meeting was held.

There is, therefore, no report from this committee.

Charles B. Porter, M.D., Chairman

Committee on Public Health

The Public Health Committee of the state medical association met in the library, fourteenth floor, Capitol Building, on October 27, 1962. Dr. P. L. Owens, chairman of the committee, presided. Members of the committee in attendance were Drs. L. H. Kermott, T. Q. Benson, A. F. Hammargren, and H. J. Wilson. In addition to the committee members, Lyle Limond, executive secretary of the state medical association, Dr. James Amos, state health officer, Dr. Alice Peterson, director of the maternal and child health division, and Mr. Kenneth Mosser, director of the Division of Preventable Diseases, were in attendance.

The following 6 items were discussed: recommendation for use of oral polio vaccine, physical fitness program, nostrums and quackery, tetanus and rabies prophylaxis problems, Cornell automotive crash injury research project, and special project for eradication of tuberculosis in North Dakota.

The following comments and recommendations were made by the committee:

1. The committee recommended that plans for mass programs using Type I and II polio vaccine in all age groups should continue. The committee further recommended that the use of Type III vaccine in mass campaigns be limited to preschool and school age children. Type III is still indicated for use among adults in high risk groups which include tourists to hyperendemic areas and persons residing in epidemic areas.

2. The committee indicated appreciation to the Woman's Medical Auxiliary for their offer of assistance in a physical fitness program. The committee discussed the subject and decided to be alert to any feasible program which the auxiliary or committee could develop.

3. Nostrums and quackery were discussed. It was noted that in recent years activity to combat quackery has been extended and increasingly so each successive year. It was recommended that local physicians and local health departments be on the alert for any quackery and nostrums in their area.

4. There was a discussion on animal bites as they relate to rabies prophylaxis. The guide prepared by the World Health Organization for giving assistance in making a decision regarding prophylactic treatment in man following an animal bite was recommended to be the guide which should be made available to physicians by the State Health Department when such information is requested.

Considerable discussion was carried out concerning possible tetanus cases. Points that were considered included (1) possible method or procedure for practical identification of those who had received tetanus toxoid, (2) possible guide for prophylactic treatment which could be of considerable value to all, (3) consideration of a crash immunization program for adults and, (4) possibility of establishing a uniform schedule for tetanus antitoxin and tetanus toxoid which would be in the interest of the patient. No specific action was taken on these points, but it was voiced by the committee that if recommendations for the use of tetanus toxoid and tetanus antitoxin could be formulated and agreed upon, the courts would take cognizance of them as the standard practice and make their decisions accordingly should suits of malpractice come before them.

5. Dr. Amos reported to the committee on the Cornell automotive crash injury research program which was being completed in the southern portion of the state. This was a cooperative program among the State Medical Association, North Dakota State Highway Patrol, State Hospital Association, and the State Health Department. Dr. Amos said the project would complete its six-month study on October 31, 1962, and would then move to the northern portion of the state. He also indicated that on the first six-month study, the participating physicians had demonstrated remarkable cooperation.

6. The tuberculosis program in North Dakota was discussed from a public health standpoint. It was felt that North Dakota was in a unique position which could possibly make it able to be the first state to eradicate tuberculosis. To eradicate tuberculosis in the state, certain actions and programs would be necessary. Most important among these are the insured continuation of the interest and cooperative spirit among the medical profession, the Tuberculosis and Health Association, the local health departments, the State Tuberculosis Sanatorium, and the State Health Department. Some of the factors which brought about this discussion were (1) a low state rate of new active cases which have been steadily decreasing over the past years; (2) a low state rate of mortality; (3) a progressive decrease of new active case rates in areas known for their high incidence of tuberculosis, such as found in larger cities and certain ethnic groups.

Percy L. Owens, M.D., Chairman

VENEREAL DISEASE CASES REPORTED BY MONTH, 1962

	Syphilis	*Gonorrhea*	*Chancroid*	*Lymphogranuloma venereum*
January	1	35		
February	7	35		
March	1	40		
April	3	61	1	
May	5	51		
June	–	53		1
July	6	75		
August	1	61		
September	3	59		
October	6	67		
November	1	51		
December	3	49		
Total	37	637	1	1

North Dakota gonorrhea rate in 1962 is 100.7 per 100,000 population.

North Dakota syphilis rate in 1962 is 5.8 per 100,000 population.

Gonorrhea decreased 10.9 per cent in 1962 over 1961.

Syphilis increased 2.7 per cent in 1962 over 1961.

VENEREAL DISEASE CASES REPORTED BY COUNTY, 1962

County	*Syphilis*	*Gonorrhea*
Adams	1	1
Barnes	–	1
Valley City	–	–
Benson	4	37
Billings	–	–
Bottineau	–	1
Bowman	–	–
Burke	–	–
Burleigh	1	4
Bismarck	5	23
Cass	–	3
Fargo	6	42
Cavalier	–	–
Dickey	–	8
Divide	–	–
Dunn	–	2
Eddy	–	6
Emmons	–	1
Foster	1	1
Golden Valley	–	2
Grand Forks	–	43
Grand Forks	1	34
Grant	–	1
Griggs	–	–
Hettinger	–	2
Kidder	1	3
LaMoure	–	4
Logan	–	–
McHenry	1	4
McIntosh	–	2
McKenzie	–	1
McLean	–	12
Mercer	–	2
Morton	–	15
Mandan	1	5
Mountrail	1	32
Nelson	1	–
Oilver	–	–
Pembina	–	2
Pierce	–	–
Ramsey	–	3
Devils Lake	–	5
Ransom	–	2
Renville	–	2
Richland	–	2
Rolette	–	38
Sargent	–	2
Sheridan	–	–
Sioux	7	171
Slope	–	–
Stark	–	1
Dickinson	–	5
Steele	–	–
Stutsman	–	3
Jamestown	–	4
Towner	1	1
Traill	–	1
Walsh	–	3
Ward	1	49
Minot	4	40
Wells	–	1
Williams	–	3
Williston	–	7

Total number cases of syphilis	37
Total number cases of gonorrhea	637
Chancroid	1 case—Cass County (Fargo)
Lymphogranuloma venereum	1 case—Ward County (Minot)

VENEREAL DISEASE CASES BY MARITAL STATUS AND SEX, 1962

SYPHILIS

Age	*Single*		*Married*		*Widowed*		*Divorced*		*Unknown*	
	M	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*
All ages	5	4	11	9	1	3	0	0	4	0
1 to 14	–	–	–	–	–	–	–	–	–	–
15 to 24	1	1	1	3	–	–	–	–	–	–
25 to 44	4	3	3	–	–	–	–	–	1	–
45 to 64	–	–	5	4	–	2	–	–	1	–
65 and over	–	–	2	2	1	1	–	–	2	–
Unknown	–	–	–	–	–	–	–	–	–	–

GONORRHEA

Age	*Single*		*Married*		*Widowed*		*Divorced*		*Unknown*	
	M	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*
All ages	210	122	100	111	3	18	12	27	26	8
1 to 14	–	11	–	–	–	–	–	–	–	–
15 to 24	131	87	20	40	–	3	–	5	5	1
25 to 44	70	19	77	61	2	11	10	18	13	5
45 to 64	4	3	1	6	–	1	2	4	1	1
65 and over	–	–	–	2	1	3	–	–	–	–
Unknown	5	2	2	2	–	–	–	–	7	1

LMYPHOGRANULOMA VENEREUM, 1962

1 case—age 42, male, white, single

CHANCROID, 1962

1 case—age unknown, male, white, single

NORTH DAKOTA TUBERCULOSIS REPORT, 1962

Source of Report of New Cases

Private physician	26
Tuberculosis sanatoria	41
General hospitals	0
Chest clinics	0
Mental institutions	1
Death certificates	1
Transferred from other states	3
Other (Veterans Administration and Indian hospitals)	5
Total	77

Race and Sex of New Cases

White:	
Male 27, Female 17	44
Non-White:	
Indian 32 (Male 12, Female 20); Korean: 1 (Female)	33
Total	77

Form and Extent of Disease of Newly Reported Cases

Pulmonary	
Minimal	11
Moderately advanced	18
Far advanced	10
Other and extent not specified	24
Nonpulmonary	14
Total	77

Age Distribution of New Tuberculosis Cases

	White		*Non-white*		
	Male	*Female*	*Male*	*Female*	*Total*
Under 5 years	0	1	4	2	7
5 to 14	3	2	4	6	15
15 to 24	2	3	2	5	12
25 to 44	2	1	1	4*	8
45 to 64	10	4	1	3	18
65 and over	10	6	0	1	17
Totals	27	17	12	21	77

* Korean

Number of newly reported cases for whom tubercle bacilli have been demonstrated	44

Preventable Disease Division
February 11, 1963

Committee on Medical Economics

By the time the Medical Economics Committe was appointed in August, 1962, a number of problems were already confronting it. A revision and addition to the 1958 relative value schedule had been adopted by the Medical Economics Committee in March, 1962. This schedule was distributed to the physicians in the state and had been adopted by Blue Shield.

However, other agencies who had agreements for the provision of medical care had not as yet accepted the March 1962 revisions. This committee sent notices of the revision to the Vocational Rehabilitation and the Indian Service, receiving prompt acceptance from these groups.

In August 1962, members of this committee met with the Public Welfare Board and agreed that the revision would be adopted by them effective September 1, 1962, with the following points of special agreement:

1. Whenever a physician bills the welfare board for a service listed in the section on medicine wherein the code number is preceded by this sign (+), a written report must be furnished to the welfare board concerning the care given before payment will be made.

2. Medical care of patients in a nursing home will be billed under Code (072) at eight (8) units per month.

3. Injections given by a physician or nurse in his employ will be billed under Code (003) at 0.8 units plus the cost of the medication.

4. Reports concerning welfare recipients will be furnished to the welfare board by the attending physician without extra charge at the time of an initial examination to determine disability (002), the periodic complete re-examination (009), upon admission to a hospital or nursing home, or when a recipient is referred for physical therapy or to the Sheyenne Memorial Hospital or the Medical Center Rehabilitation Unit.

5. Other reports requested by the welfare board will be billed under (075) with a unit value of one (1) if the request is for a brief report, and a unit value of two (2) if the request is for a lengthy, complete medical report.

The first meeting of the Medical Economics Committee was held September 29, 1962. It was agreed at that time to undertake a more complete revision of the relative value schedule. Since that date, many members of the committee and many other physicians in the state have spent uncounted hours in an effort to adjust the inequities in the schedule and to cover procedures which have not been included heretofore. There is still much preparation to be done before this project is ready for adoption. It is hoped that this revision can be presented to the council at their December meeting, and, if approved by them, taken to the various agencies concerned for their implementation at the start of 1964.

Your Committee on Medical Economics is also in the process of reviewing our disability insurance program to make sure that our members are receiving the greatest possible benefits at the lowest premium.

We are interested in having only one fee schedule in use, and, to that end, we are negotiating with the Workmen's Compensation Bureau for the adoption of the relative value schedule with conversion factors appropriate for this class of working person.

During December and January we held several meetings with the public welfare board and representatives of Blue Cross-Blue Shield exploring the possibility of the welfare board buying medical care of the indigent through those agencies. Insufficient interest was shown on the part of the welfare board to warrant further investigation of this approach.

We have received some communications regarding claims which our committee feels should be handled by the district medical review committees. In some instances, the state association office has been unable to furnish us with the names of the members of the review committees. It is our recommendation that each district society establish a medical review committee and advise the state association office as to the component members.

M. E. Nugent, M.D., Chairman, and
V. J. Fischer, M.D., Vice-Chairman

Committee on Rural and School Health

The committee has not held any meetings this past year. Your chairman has continued to work with the immunization survey this past year, and some progress has been made. Your chairman had hoped to accomplish a total population survey of the state of North Dakota, but due to difficulty in obtaining personnel to carry out this survey, we have settled for a partial population survey.

In order to accomplish this partial population survey, the State Health Department was contacted and Dr. Alice Peterson (Division of Maternal and Child Health) formulated the survey questionnaire blank to be used. The survey questionnaire blank was approved by the State Health Council, Dr. J. R. Amos, state health officer; Dr. R. E. Hankins, a former Rural Health Council committee member, and your chairman.

The North Dakota Homemakers Council was contacted. At their March 1962 state council meeting they agreed to carry out this immunization survey in all the counties in the state. This limits the survey to all the homemakers' families in the state, including the adults and children of these families.

All the counties in the state have now received or will receive these immunization blanks. I have included a blank with this report. (A copy of the blank follows this report.)

When these survey blanks are all returned to the State Health Department, they will be processed statistically.

I wish to thank the officers of the North Dakota Homemakers Council for their help in making the survey: Drs. Alice Peterson, J. R. Amos, and especially R. E. Hankins for their very kind assistance with this program.

M. S. Jacobson, M.D., Chairman

NORTH DAKOTA HOMEMAKER CLUBS
INDIVIDUAL IMMUNIZATION SURVEY

(Where dates are requested, give approximate month and year)

Name . . . . Age . . Sex . .
Address . . . . Occupation . . . .
If student, name of school . . . .
Poliomyelitis (Salk vaccine) immunizations Yes . . No . . .
  If yes, how many shots? . Date of last shot . . . . . .
  Have you had Oral Polio Vaccine? Yes . . . . No .
  If yes, how many? . . . .
  If not, do you plan to have Oral Polio Vaccine? Yes . No
Smallpox vaccination with a "take" (scar) evident? Yes . . No .
  If yes, date . . . .
  Revaccination? Yes No . If yes, date . . . .
Diphtheria completed series? Yes No If yes, date . . . . .
  Booster? Yes No If yes, date . . . .
Whooping cough completed series? Yes No If yes, date . . .
  Booster? Yes No If yes, date . . . .
Tetanus (Lockjaw) series? Yes . No . . If yes, date . . . . .
  Booster? Yes No If yes, date . . . . .
(The above three, diphtheria, whooping cough, and tetanus, may have been received at the same time known as D.P.T.)
Mantoux (TB skin test) test? Yes . No . If yes, date . . . .
  If yes, results of test . . . .
Date of last chest x-ray . . . .
Date of this survey . . . .

Keep second copy

REPORTS OF SPECIAL COMMITTEES

Committee on Mental Health

This has been a very rewarding year and also a very disappointing year. On August 26, 1962, the committee first met in Jamestown, North Dakota, at the request of Governor Guy and after consultation with Dr. E. J. Larson, president. We looked into the situation at the state hospital, which had been in the news since June 1962. We had almost 100 per cent attendance on a three-day notice and came up with the following recommendations:

1. It is recommended that Governor Guy use the Statutory Committee as set up by (25-10-03) of the North Dakota Century Code (The Mental Health Co-ordinating Committee) to help the state hospital resolve its problems.

2. It is recommended that the liaison committee to the State Board of Administration (Governor's Committee) be dissolved since it seems to be serving no useful purpose.

3. It is recommended that Governor Guy be informed that the Committee on Mental Health of the North Dakota State Medical Association is vitally interested in providing good medical care to the mentally ill, and will cooperate in every way with the Statutory Committee (25-10-03) to improve the care of the mentally ill.

These recommendations were given to Governor Guy and Mark Andrews the following day. Then, on September 11, 1962, the chairman visited the state hospital.

This was another year of investigations, and the National Institute of Mental Health did a further survey on the state hospital. Also, Dr. Carroll Lund of our association was chairman of the Governor's Citizen Committee to investigate the state hospital. These reports were available to those who wished to read them.

The first American Medical Association National Congress on Mental Health was held October 4, 5, and 6, 1962, in Chicago. There were over 2,000 participants from all over the United States, and North Dakota had the following people in attendance: Drs. Keith G. Vandergon, L. G. Pray, Olav Gardebring, H. E. Guloien, Charles Rand, Ernst Schmidhofer, C. J. Klein, Victor Szyrynski, John F. Leonard, USAF, Mrs. Mildred Hoadley, and Mr. Lyle A. Limond.

After two days of conferences, the following outline of a needed program in North Dakota was made:

In North Dakota we feel that it is necessary to do the following:

1. Establish "Community Service Centers" (mental health clinics) (1) by attempting to pass permissive (enabling) legislation as was found in the bill that failed to pass in the 1961 legislative assembly; (2) by attempting to secure county or regional support without enabling legislation, but with the kind of support such as was done in our neighboring state of South Dakota; (3) education of the public through meetings of the North Dakota Chapter of the AAGP, the North Dakota Mental Health Association, the North Dakota Branch of the National Association of Retarded Children, and statewide programs sponsored on a cooperative basis.

2. Improve the state hospital and State Mental Health Authority programs by (1) attempting to secure additional funds from the state legislature and place the state hospital and the state school under the State Mental Health Authority in the State Health Department; (2) attempting to secure even better coordination of programs by having one board in charge of the health and welfare activities in the state.

3. Attempt to establish professional child and family services on a county or regional basis with investigations. coordination. and unification to include the mental health clinic and other community social services.

4. Training programs. (1) Present programs are to be continued, but added emphasis is to be given in contacting physicians, clergy, psychiatric social workers, nurses, and police. (2) Expand present programs to fill positions elsewhere.

5. Research. (1) Continue to back present programs and encourage the development of programs by the State Mental Health Authority, the state hospital, and the university. (2) Emphasize field research.

6. Establish liaison with our neighboring states to plan programs that affect the states. (1) Formation of an interstate planning committee.

Submitted for KEITH VANDERGON, M.D., Chairman, by Lyle A. Limond, Executive Secretary.

On October 6, Congress was summarized for the participants by leaders in the field of mental health. It is of interest to note that the board of trustees and the House of Delegates of the American Medical Association gave their approval of the program suggested in the report "Action for Mental Health," and as stated by the American Medical Association Council on Mental Health in its program. Later in October your chairman toured the state school at Grafton.

On December 7, 1962, the committee again met to formulate a continuing program to be presented to the council and to the Legislature.

Senate Bill No. 47 of the 1961 Legislature was discussed, and it was decided to go to the council and ask permission to present this bill to the Legislature in spite of the action of the House of Delegates in June 1962. The council deferred the matter to the Committee on Legislation, which came up with an addition to the bill which was acceptable to the North Dakota State Medical Association. This clause was removed in the House and the bill was defeated in the Senate.

Next it was decided to follow our policy of recommending that the state hospital, and so forth, be transferred to the Mental Health Authority. This was given the "okay" by the council and Senate Bill No. 330 was submitted. It passed the Senate and had a good chance of passage until confusion created by some members of the medical profession caused the bill to go down to defeat, although more than 50 per cent of the House favored the measure.

The committee also recommended passage of the "Interstate Compact on Mental Health." This was approved by the council, and Senate Bill No. 224 was submitted to the Legislature and supported by the association. Bill passed and signed by the governor.

An amendment to Section 25-10-03 of the North Dakota Century Code was also approved. This met with defeat in the Legislature.

Members of the committee testified before joint House-Senate committees and attended Dr. Menninger's talk at the Capitol during the legislative session.

On March 1 and 2, Dr. A. F. Samuelson and I attended the American Medical Association's Ninth Annual Conference of Mental Health Representatives of the State Associations. The theme was "Implementation of the American Medical Association Mental Health Program—Statewide Planning for Mental Health." This was truly an inspirational program.

Here in North Dakota, your committee has been working on a plan that came form the survey of our mental health facilities made by NIMH and the report formed by the Legislative Research Committtee from 1959 to 1961. The initial steps had been made in the 1961 legislative session, and we have seen more mental health personnel enter the state and enter private practice in our 4 large cities. We have also seen general hospitals under local control add psychiatric sections, yet I am very disappointed that the programs presented this year, which were steps in our continuing program and which were in accord with American Medical Association policy, met defeat.

I would like to suggest that in the future no action be taken by a committee of the association unless a quorum is present!!

Efforts will have to be made to improve our mental health facilities in the next two years, and I do hope that some people will find time to read the American Medical Association's Statement of Principles on Mental Health and the program of the Council on Mental Health.

Keith Vandergon, M.D., Chairman

Committee on Cancer

The efforts of your Committee on Cancer during the year of 1962 to 1963 were directed mainly toward writing an anti-cancer quackery bill and presenting it to the Legislature for action. During the past year, bills from 4 other states, namely, California, Colorado, Nevada, and Kentucky were studied by our committee. Most of these bills passed the state legislature in the above-mentioned states in 1959 and 1961 and were rather complicated. We decided to pattern our bill after that of Kentucky, which was more simplified. This would enable us to continue our present committee without the addition of chiropractors, osteopaths, and laymen, and, in addition, the work of policing the state for cancer quacks would be placed in the hands of the State Board of Health. Dr. Amos, state health officer, was personally consulted regarding their work in this bill, and, although it imposed additional burdens on his department, he was very gracious in accepting the responsibility.

During the past summer, visits were held with William J. Daner, our attorney, who drew up the bill. He suggested that this be presented in the House rather than in the Senate. Various senators and representatives were contacted prior to legislative sessions by letter with explanations of the evils of quackery. In addition, the various county commanders of the cancer society were contacted and advised to write, as private citizens, to their legislators, as it is not permissible for the North Dakota division of the American Cancer Society to enter into political campaigns. The bill was called HB 768. Appearances were made before the House committee, and the bill received a satisfactory approval by this committee. It passed the House by a vote of 100 to 5. Two weeks later, a similar appearance was made before the Senate committee. Dr. Roger Berg of Bismarck assisted me in presenting oral arguments to this committee. Excellent work by Dr. Mahoney, senator from Ramsey County, paved the way for a 48 to 0 majority in the Senate. At the time of writing, the bill was signed by the governor and now becomes a law.

We want to express our thanks and appreciation to all doctors in the state who assisted in enabling the passing of this important legislation.

At the time of writing, various cancer "cures" have been floating around the United States. Possibly members of the North Dakota medical profession might be hearing about some of these, such as Krebiozen, the Glover Serum, Carcin, Gerson Method, and Rivici Cancer Control.

1. *"Krebiozen"* is a coined name applied to an alleged anticancer drug. It is said to have been produced by Dr. Stevan Durovic in Argentina prior to 1949. Dr. Durovic claims that he injected 2,000 Argentinian horses with *Actinomyces bovis*, a microorganism which causes "lumpy jaw" in cattle, and from the blood of these infected horses he extracted 2 gm.—about one-half teaspoonsful—of a whitish powder which he named "Krebiozen." The full details of the method of extraction have never been revealed. Later, Dr. Durovic brought this powder to the United States. Here, without prior chemical analysis of the powder, he dissolved it in No. 9 mineral oil in the ratio of 1 part of "Krebiozen" to 100,000 parts of mineral oil. Thus, he made the original (and only) supply of "Krebiozen" amounting to 200,000 doses, 1 cc. each.

In August 1949, Dr. Durovic met Dr. Andrew C. Ivy, a distinguished medical researcher and vice-president of the University of Illinois. At this time, Dr. Durovic told Dr. Ivy about "Krebiozen," which he believed was effective against cancer, and he solicited Dr. Ivy's help in testing the drug. Dr. Durovic is not licensed to practice medicine in this country.

Their steady campaign of publicity ostensibly designed to obtain support from either the American Cancer Society or the National Cancer Institute for testing the substance on their own terms has aroused public interest in "Krebiozen."

2. *"The Glover Serum,"* according to the American Cancer Society's files, was proposed by Dr. Thomas Joseph Glover, Toronto, Canada, in 1920. Dr. Glover reported that he obtained from blood cultures of many cancer patients and from cancer tissues, a pleomorphic organism that passed through a Berkefeld filter. Variants of this have been secured by animal innoculations and special cultural methods. It has also been referred to as a virus. In preparing the serum, filtrates obtained by passing seven-day cultures of several strains of the microorganisms through Berkefeld filters were injected into horses which were later bled. It was reported that only a limited amount of the antiserum was made. The initial dose was 2 cc., and subsequent doses of gradually increasing amounts were given at intervals of two or three days, usually near the site of the neoplasm. Charges were reported to be $25 for 5 doses.

3. *"Carcin."* The first known mention of "Carcin" is in a publication by Dr. Pawlotzky dated 1902. "Neo-Carcin" was proposed as an improved form of "Carcin" in 1953. The first articles appeared in Russia, then later in Switzerland, and still later in France. There is no available information concerning the preparation or manufacture of "Carcin." In a prospectus put out by Pharma-Bilogica S.A., Lugano, Switzerland, dated 1950, information was given that "Neo-Carcin" would be produced by this organization. In the prospectus the nature of the product was described as follows:

> The preparation is a mixture of active anticancerous substances. It contains some glandular extracts, some organic and inorganic substances, some extracts from plants, some corrective substances, some polypeptides in the same way as mesothorium and thorium X in oligodynamic dosage.
>
> "Neo-Carcin" is used as an active and specific adjuvant for the treatment of malignant tumors (carcinoma, sarcoma, lymphogranuloma) in all stages of the disease and equally for the humoral deterioration of the "cancerous dyscrasie." The treatment, according to the case, will last from thirty-two to sixty-two days.

4. *"The Gerson Method."* The method of treatment of cancer and other diseases proposed by Dr. Max B. Gerson and used during his lifetime in his sanatorium near New York City is essentially that of diet. The principal ingredients stressed are liver, vitamins, and fresh vegetables and fruit juices. Food is not to be prepared in aluminum utensils; glass utensils are preferred. Vegetables are chopped up and made into juices by means of special chopping and juicing machines offered to patients

for sale at around $150. Frequent and copious enemas, including coffee enemas, are also used. While Dr. Gerson was alive, patients were usually treated as inpatients at the sanatorium and allowed to return to their homes under treatment when Dr. Gerson thought their conditions permitted their so doing. They were taught to give their own injections of liver at home and he advocated that the treatment be continued for a period of one year.

Dr. Gerson came to this country from Austria in the late 1930's. His work in the treatment of cancer by dietary methods had previously been used in Austria and Germany for the management of both cancer and tuberculosis. From 1946 to 1950, he used this treatment at the Gotham Hospital in New York City until, during the latter year, his affiliation with that hospital was terminated. Dr. Gerson died of pneumonia March 8, 1959.

5. "*The Rivici Cancer Control or Lipid Therapy*," proposed by Dr. Emanuel Rivici, scientific director of the Institute of Applied Biology (Trafalfar Hospital), New York, for the treatment of cancer and certain other conditions, is based on the belief that cancer is the product of imbalance between 2 types of lipids (acid and alkaline) in the tissues. This is reflected in the reactions of pain pH of urine and tissues, and so forth, which are associated with changes in the acid-alkaline balance of the body. After determining the type of imbalance present in the tissues, patients are treated by adjusting the acid-alkaline level through administration of lipids or "liposides" which have an acid or alkaline reaction respectively. Dr. Rivici describes this treatment of cancer as "biologically guided chemotherapy."

Since 1941, when this therapy first attracted attention in Mexico, many agents have been named by the proponents as giving promise at the moment in control of certain types of cancer reflecting an acid or an alkaline imbalance. Since, however, research is constantly being conducted, and new agents tested and substituted, no agent or agents to control either type of imbalance has been reported as an agent of choice for long. For instance, during one year, 1952, 17 different products, 9 for treatment of acid symptoms, and 8 for alkaline, were proposed for clinical trial to one group which was trying to reach agreement with the institute on a plan for an evaluation study of this therapy.

Dr. Rivici, a naturalied citizen of the United States, was born in Rumania in 1896, the son of a physician. He obtained his medical degree in 1920 at the Faculty of Medicine, Bucharest, and was licensed to practice medicine in New York in 1947.

Your chairman attended four committee meetings and the state meeting of the North Dakota division of the American Cancer Society, also an interim meeting of the American Cancer Society meeting in Chicago, and the annual meeting of the same organization in New York in October 1962. The national meetings highlighted a broadened attack on leukemia and cigarette smoking and its relation to the increase in lung cancer. Voluminous statistics were presented at all meetings which indicate that the improvement of the cancer cure rate is a result of better education, better facilities, better and more widely available treatment. Important is the fact that more people have learned to have medical checkups regularly. Professional education for doctors and public education for laymen were in 1962 helping to save many thousands of lives from cancer.

Carroll M. Lund, M.D., Chairman

Committee on Veterans Medical Service

No problems have been referred to the Committee on Veterans Medical Service. No committee meetings have been held and no action taken. It is my opinion that no problems have been received for at least three years. There is no need for further continuance of this committee.

R. F. Nuessle, M.D., Chairman

Committee on Maternal and Child Welfare

This committee met on March 9, 1963, at the DePuy-Sorkness Clinic in Jamestown.

1. "Pierre the Pelican" series are being purchased by the Maternal and Child Health Division of the North Dakota State Health Department and sent to all mothers with their first-born. This is an educational series consisting of 12 monthly leaflets. Many complimentary letters have been received at the North Dakota State Department of Health from parents who have received these educational pamphlets. In conjunction with this, we recommend that a leaflet called "The Meadow Lark" be sent at fourteen months and twenty months. This will present accident prevention information.

2. By our recommendation last year, the phenylketonuria test is being carried out and will be finished the first of September. Almost 4,000 blood samples and urine samples have been collected in 18 North Dakota hospitals. This is a part of a 400,000 infant study being done in the United States. After the results of this pilot study are in, further recommendations will then be made.

3. At the present time, only 3 hospitals are participating in the American Medical Association Research Foundation perinatal study. We recommend that all hospitals not doing such studies should use the outline supplied by the Medical Research Foundation.

4. A letter was received from the Stark County Welfare Board, Dickinson, requesting a formula for baby feedings made from dried skim milk. This product is being received from the surplus commodities program, and we make the following recommendations: Milk with natural vitamins A and D is necessary for normal growth and development. Skim milk preparations will have to be supplemented with vitamins and will not contain any fat. Therefore, no skim milk formulae will be recommended for infants unless specifically ordered by the physician for medical reasons.

5. Our committee received a complaint by the State Health Department from one of the major hospitals because welfare workers from private agencies were picking up infants of unwed mothers. These workers have not been identified by name when the hospital is notified by letter or by telephone call from the agency. Apparently, credentials identifying the worker are not available. Secondly, the private agency welfare worker insists on removing the name band on the infant before the infant is removed from the hospital. It is known that babies from another hospital in the same town who are enroute to Fargo have also been picked up on the same trip, which could lead to misidentification. Our committee, after much discussion, recommended (1) that private agencies provide workers who pick up infants with proper identification which must be shown before the hospital releases the baby, (2) that identification bracelets remain on every infant until it is delivered either to a foster home, when the baby does not go through agency headquarters, or to the agency headquarters.

6. A discussion on oral polio vaccine ensued and since 62,527 persons received Type 1 in the fall of 1962, another 13,000 have received Type 3; a discussion regarding the use of Type 3 brought forth the following

recommendations: Anyone, regardless of age, could have Type 3 at their request.

The meeting was then adjourned.

Robert E. Lucy, M.D., Chairman

Committee on Diabetes

The Committee on Diabetes, initiated by Dr. Leonard Larson, Bismarck, has continued its primary function to encourage and coordinate annual diabetes detection drives throughout the state under sponsorship of constituent local medical societies. This function is a co-operative effort in support of National Diabetes Week, sponsored in November of each year by the Committee on Detection and Education of the American Diabetes Association, Inc. Increasing participation is in evidence among district medical societies throughout the nation. Last year, well over 1,000 societies held individual detection drives.

Only one formal diabetes detection drive was held in North Dakota during Diabetes Week 1962 in Williston, under the direction of Dr. Alan K. Johnson, chairman of the Committee on Diabetes Detection of the Kotana District Medical Society. Other committee members were Dr. Chester Borrud and Dr. Charles Petty. The glucosuria reagent, "Clinitest," was utilized in this detection drive, and a total of 1,456 persons were tested. Twenty-two urine specimens proved positive for sugar. All 22 positive tests were referred to respective physicians. A high degree of efficiency is indicated by the fact that 18 of 22 physicians to whom the various positive reactors were referred sent in follow-up reports. Two previously unknown cases of diabetes were established in the final follow-up analysis. Results by age group were as follows:

Age	*Total tested*	*Positives previously unknown referred to physician*	*Total diagnosed new diabetics*
0 to 4	49	1	0
5 to 24	1,082	10	0
25 to 44	148	5	1
45 to 64	125	2	1
65 and over	52	4	0
All ages	1,456	22	2

Reagents were provided by the manufacturer of "Clinitest" (Ames Company), and detection centers were utilized. The detection centers were utilized through the co-operation of the Upper Missouri District Health Unit in cooperation with and under the direction of the Kotana District Medical Society during the week of November 12 to 16, 1962. Publicity was carried out through schools, newspapers, local radio and television stations. The area covered consisted of Williams County (Williston, Alamo, Grenora, Tioga, Ray, and Epping) and Divide County (Crosby, Alkabo, Ambrose, Noonan, and Fortuna).

Dr. Johnson and his committee are to be commended without reservation for carrying out a highly efficient program and for providing a service to the public at large. It has been repeatedly emphasized that diabetes detection drives which are carried out by respective medical societies as a free service to the public have greatly enhanced public relations with the medical profession throughout the nation. Certainly this goal has been achieved by the Kotana District Medical Society. The Committee on Diabetes of the North Dakota State Medical Association sincerely hopes that other constituent medical societies of the state will be inspired to execute a detection program in 1963 similar to the Kotana District Medical Society program of 1962.

As chairman of the State Committee on Diabetes and on behalf of the committee, I would like to again commend Dr. Johnson and his committee for carrying out a very efficient and successful program.

E. A. Haunz, M.D., Chairman

Committee on Liability Insurance

The Committee on Liability Insurance has had no meetings during the past year. It has had some correspondence with individual members who have had problems, but apparently these have been resolved satisfactorily.

Joseph Sorkness, M.D., Chairman

Committee on Crippled Children

A meeting of the committee was held at 10:00 A.M. on December 8, 1962, at the Gardner Hotel, Fargo. Present were Chairman Paul Johnson, M.D., Drs. A. E. Culmer, B. A. Mazur, George Foster, C. W. Hogan, J. V. Miles, and L. B. Silverman. Others present were Mrs. Myrtle Kohler and Mr. Daniel Buchanan.

Dr. Johnson notified the committee that he was no longer the medical director of the Crippled Children's Services Program. He announced that the acting medical director is Dr. Paul W. Freise.

It was noted by the chairman that a problem existed with regard to the determination of financial eligibility of recipients of assistance under CCS. Individual counties, he went on, do not now participate in the payment for services rendered through CCS. It was suggested that counties were perhaps prone to certify too many individuals for the program since they had no obligation to share in the cost of services rendered to persons certified by them.

It was further contended that counties would be more critical of CCS, while actively working to curtail abuses (at least partially), if they were required to assume part of the cost. The committee would be in favor of the Legislature's assigning a portion of the cost of CCS to the counties. They felt that utilization of the program would be reduced were the counties assessed.

That a possible budgetary problem with CCS would occur in 1963 was underscored by the chairman. He remarked that the budget board had reduced the request of the CCS program from $500,000 to $400,000. Dr. Johnson further noted that CCS was complicated further through different standards being used from county to county in determining financial eligibility for the program.

One suggestion made as a possible solution to fiscal difficulties with CCS was to ask the patient to assume part of the cost of his care.

A motion was entertained by Dr. Mazur that the council be asked to approve and implement the submission of a proposal to the 1963 Legislature, calling for individual counties to contribute 10 per cent of the cost of CCS incurred by their respective residents. The motion was seconded by Dr. Foster and passed.

Members of the committee next considered the problem of bringing the CCS fee schedule into line with that paid under other programs administered by the public welfare board. It was noted it is hard to justify a reduced fee paid for services rendered to non-needy persons, as was suggested is the case a good many times under CCS. Discussion followed of the effect on the CCS budget of the average cost per patient day fee schedule received by hospitals. The group concurred that perhaps without exception, every hospital's cost increased annually. The committee felt that, as a result of the attitude of hospitals in allegedly raising their average cost each year, physicians were being forced to subsidize CCS through receiving substandard fees. Dr. Mazur moved that the council be asked to take steps toward removing the inequities in the (Hospital) CCS reimbursement formula by: seeking to bring the per diem payment to hospitals into a realistic perspective, based on the actual cost to the hospital for that (CCS) patient.

In making the above suggestion, it was the committee's contention that under the present hospital reimbursement formula, a premium could rightly be placed on poor administration, purchases of equipment not really needed, and so forth, which would, in turn, raise the hospitals' "average cost per patient day," thereby making hospitals eligible for annual increments in the CCS reimbursement formula. The committee felt that physicians, as well as other vendors, were being indirectly forced to subsidize the CCS program through the questionable fiscal attitudes expressed by hospitals.

Dr. Mazur further moved that the council be asked to give its support to keeping the biennial CCS appropriation sufficient to meet the need of the program. Dr. Hogan seconded the motion, which carried without dissent.

Dr. Johnson briefly discussed the possibility of including payment for hearing aids under CCS. If, however, such a program is undertaken, it would be done very conservatively, Dr. Johnson commented.

There was some discussion that CCS, which was originally intended to cover orthopedic problems, had not expanded to the point where less than 50 per cent of the cases were in the area of orthopedics. Discussion also centered around the policy being followed with regard to cardiac catheterizations being done in the state. Dr. Johnson explained that, where feasible, the work is done in Bismarck; where the particular case indicated it, the patient is immediately sent out of state. An example was cited of a case where the immediate need for treatment justified referral to a cardiac center without the delay of having cardiac catheterization done locally.

Paul Johnson, M.D., Chairman

Committee on Foreign Trained Physicians

The Educational Council for Foreign Medical Graduates was established in 1957 by the combined effort of the Federation of State Boards of the United States, the American Medical Association, the Association of American Medical Colleges, and the American Hospital Association. There are now 36 states which require an E.C.F.M.G. Certificate as a requisite for admission to their state board examinations; 7 states have laws or regulations which permit no consideration of such a certificate; and 5 states cannot admit foreign graduates under any condition. Up to January 1, 1962, 34,923 applicants had written this examination, and 23,153 had obtained a grade of 70 per cent or better. Since 1961, the number of applicants in the United States has decreased, not because of any lessened desire to enter the United States, but rather because of the fact that 81 examination centers have been established overseas which eliminate those whose medical education is substandard before they are granted a visa to enter. 5,915 applicants have passed this examination overseas which represents about 30 per cent of those who wrote the examination. It must be emphasized that this examination is not intended to determine fitness to practice medicine but rather to determine if the applicant's premedical and medical education has been approximately equivalent to medical education in the United States. While the examination questions have been prepared by the national board and are of the multiple choice type, *it should be stated that the more difficult questions have been eliminated by an examination committee of the national board—so the questions are actually less difficult than those prepared for United States graduates.*

The E.C.F.M.G. issues 2 types of certificates—1 permanent, requiring an examination grade of 75 per cent or better, and 1 temporary, requiring a grade of 70 per cent or better. Most of the state boards, including North Dakota, require the permanent type. The temporary certificate was promoted by the American Hospital Association in order to insure a greater supply of interns.

In 1961 (no figures as yet available for 1962), 45 United States Medical Boards examined graduates of 255 medical schools in 60 countries. Of the 2,683 who were examined, 1,890 were licensed and 793 failed, a mortality of 29 per cent. In the period from 1930 to 1962, 60,884 were examined; 38,747 passed, and 22,137 failed, a mortality of 42 per cent. New York, Illinois, and Virginia have licensed the greatest number. If the present influx of foreign graduates continues, it has been estimated that within a few years there will be 1 foreign graduate intern for every 2 United States graduate interns on duty in hospitals in the United States. The present shortage of interns is characterized by an all-time vacancy rate of 32 per cent; there is 1 unfilled position for every 2 positions filled. The surplus of unfilled positions is the direct result of a 41 per cent increase in available internship positions in the United States from 1946 to 1961. There is, of course, no mechanism by which the Council of Medical Education of the American Medical Association can refuse to approve an internship program which appears to meet all the requirements as set forth in "Essentials for Intern Training."

The Council on Medical Education has been requested by the House of Delegates of the American Medical Association to try to obtain a greater percentage of foreign graduates in many hospitals in the United States, especially those affiliated with medical schools, and to withdraw approval of those hospitals which have only a few foreign graduate interns. This will be done slowly and judiciously by the council so as not to suddenly disturb the present set-up.

Because of the limitations of their medical education, plus language problems, foreign interns often provide little stimulus to the medical staff in providing a good educational program. Our objective is to maintain a single high standard of medical education and training in the United States and, at the same time, prevent the foreign intern from being exploited and the objective of the exchange visitor program violated. At present, 15 per cent of the foreign students in the exchange visitor program are physicians. Thus, the United States has an opportunity to contribute in a significant manner not only to the international exchange in medicine but also to provide other nations with a better understanding of our own social and cultural characteristics.

In the past year, the North Dakota State Board of Medical Examiners licensed 32 United States graduates and failed none; licensed 5 Canadian graduates and failed none; and licensed 9 foreign graduates and failed 1. Of the 9 foreign graduates, 5 were from English-speaking schools and 4 from non-English-speaking schools. This represents a mortality rate for foreign graduates considerably below the general average in the United States. At the present time, there are 33 foreign graduates in practice in North Dakota, 17 of whom are in a specialty, and 16 in general practice.

Again, the majority of foreign medical graduates who apply to the secretary of the North Dakota State Board of Medical Examiners for information relative to possible licensure in North Dakota are interested in practicing a specialty, if licensed, and not interested in doing general practice in rural areas where physicians may be needed.

C. J. Glaspel, M.D., Chairman

Committee on American Medical Education Foundation

As reported last year, the American Medical Education Foundation and the American Medical Research Foundation were combined under the present title—"The American Medical Association–Education and Research Foundation." Under this new program, financial aid was extended to medical students, interns, and residents through a new medical education loan guarantee program.

Donations from physicians, medical societies, and auxiliaries once again made up the bulk of American Medical Association–Education and Research Foundation's financial support—$1,723,348. This was received mainly by direct mail appeals at intervals throughout the year.

The women's auxiliary is doing a remarkable job and their donations showed an increase over last year's figures. Private industry, charitable foundations, and national medical organizations helped make up the grand total of $2,390,817.17.

North Dakota did exceptionally well. Donations to medical schools, $6,026.38, and to the loan guarantee program, $1,080 for a total of $7,106.38. Of this, our Auxiliary contributed $811.38.

The University of North Dakota Medical School received $2,630.16 as their share of undesignated funds—$3,416.38 earmarked by donors for the school making a total of $6,046.54.

In looking back over the past ten years, the growth of this fund, slow at first, is now assuming proportions that represent real assistance for medicine; its growth will continue.

W. E. G. Lancaster, M.D., Chairman

Liaison Officer to the North Dakota State Bar Association

A medical-legal institute was held at Bismarck on the afternoon and evening of April 5, 1963.

Twenty-nine doctors and 48 attorneys were registered for this meeting. This represents a considerable increase in the number of the medical personnel but a decrease in the number of law personnel who have attended previous institutes.

It was felt that a good program had been developed and was generally well accepted. It is hoped, however, that in planning for future possible institutes, even better participation on a statewide basis could be anticipated of medical personnel.

Paul L. Johnson, M.D., Representative

Committee on Pharmacy

There has been no meeting of the committee during the year 1962 to 1963; consequently, no report is submitted.

A close liaison is being maintained, however, between the Committee on Pharmacy of the North Dakota State Medical Association and the North Dakota Pharmaceutical Association.

O. A. Sedlak, M.D., Chairman

Liaison Committee to the North Dakota State Dental Association

Your liaison officer has been in close contact with the president-elect of the North Dakota State Dental Association during the past year.

Relationship between our organizations remains on a basis of mutual respect.

David G. Jaehning, M.D., Representative

Report of Representative to Medical Center Advisory Council

In September 1962, 44 full-time and 2 part-time freshman students and 42 second-year students were admitted. Study of the various departments indicates that, with a few minor structural adjustments, 4 or 5 more students could be accepted if there should be an unusual number of well-qualified applicants.

There has been no problem in transferring students, and, as of this writing, 17 students have been transferred for next fall. This is well ahead of the usual experience.

In addition to the regular medical students, there are 30 or more graduate students in various departments of the medical school.

Faculty. As usual, there are shortages in certain departments. Efforts are being made to obtain additional teaching help in the departments of microbiology and physiology.

Loan fund. The student loan fund continues in great demand. During the past year, a total of $72,5000 was loaned to 32 medical students and an additional $25,000 to 13 dental students. Four students repaid loans totaling $20,000 so they need not feel obligated to return to the state. We now have between $350,000 and $400,000 of medical center funds tied up in these loans.

Interest in returning to North Dakota seems to vary from year to year, and, as yet, there is no real evidence that the loan program is stimulating our graduates to return. More time is needed to settle this question and to determine the advisability of tying up this much money in this program. The American Medical Association loan program is becoming very popular, making over 5,000 loans last year and expecting to make 7,500 this year.

There are also loan funds available from the Kellogg Foundation, Fargo Clinic, North Dakota Radiological Society, and Medical Women's Auxiliary loan fund as well as scholarships ranging from $200 to $500 from other sources.

Blood bank. There have been frequent comments and inquiries regarding the advisability of continuing the blood bank, it appearing to many to be confined in its service to a small area of the northeastern part of the state. Accordingly, your representative suggested to the Medical Center Advisory Council that a detailed study of the blood bank program be made to see if its continued existence was justified. Your representative is in possession of a detailed report, the summary of which follows:

The blood bank budget is $25,000 a year. Within this budget, the blood bank is serving as follows in addition to its blood bank functions:

1. As a teaching facility for students enrolled in the course of medical technology; each student receives four weeks of intensive training in blood bank techniques—

history taking, drawing of blood, and complete laboratory procedures.

2. Statewide service on Rh titers. Over 3,000 blood specimens are received from the entire state each year.

3. Blood for out-of-state use. Around 300 whole blood units are sent out of the state each year for the use of North Dakota residents.

4. Has set up 33 blood donor clubs.

5. Plasma: Plasma is furnished free of charge to anyone requesting it from the state.

6. The blood bank has established approximately 80 "walking blood banks" throughout the state. Over 115 typing clinics have been conducted.

7. Blood is drawn at the bank for staff members of the medical school for purposes of research, especially in virus work.

The investigation indicated that by eliminating the blood bank but still supplying certain essential features such as the statewide service on Rh testing and the training features necessary for medical technologists, we would save only about $12,000. This did not seem a justifiable saving for discontinuing blood bank services, so it was the conclusion of the Medical Center Advisory Council that the blood bank be continued.

Rehabilitation center. As of October 17, 1962, the inpatient service area was opened, and since that time a variable number of patients have been housed. As of this writing, there are 7 or 8 seriously disabled patients being housed in the unit. The number of new admissions is increasing slowly, there being altogether 174 new admissions for the year of 1962 in addition to the number of old patients continuing under treatment and observation.

Dr. Mary Ellen Obert, a qualified internist, has been retained as medical consultant on a part-time basis. She is in the rehabilitation center daily and supervises the general physical condition of all inpatients and outpatients when necessary. This is a definite improvement in the medical supervision of this program. In addition, the consultation services of necessary specialists are being continued.

A grant has been received which can be used to pay the salary of a qualified physician physiatrist if and when such can be obtained. This would, of course, be a tremendous improvement in the program and might well be of considerable value to the whole state.

Biochemistry department. The performance of unusual biochemical tests not generally available throughout the state continues, and the demand is great. In the past year, 4,637 tests of various types were done. This is 700 more than in the previous year and over twice as many as in 1957.

As has been previously reported, it is the intent to confine this service to tests not generally available and which are difficult to perform accurately in the average laboratory in North Dakota. This feature of the biochemistry department alone requires the employment of 3 medical technicians and a part-time secretary.

Since last year's report, there has been no major change in the nursing education and medical technology training programs.

Periodically, and almost invariably, a few months before each legislative session, various rumors start about the medical school. These are mostly unfounded and usually due to misunderstanding or misinformation. To help answer some of the most recent rumors, school personnel prepared the attached fact sheet. It will be of interest to you, so I submit it as an addendum to this report.

P. H. Woutat, M.D., Representative

Fact Sheet
University of North Dakota School of Medicine
January 21, 1963

	Rumor	*Fact*
Cost per student per year:	$35,000	$5,400

This figure does not count the 230 nonmedical students taught in the medical school out of our budget. The planning booklet, written by a committee of the American Medical Association and American Association of Medical Colleges, composed of medical school deans and published by the Department of Health, Education, and Welfare in 1961, estimated the operating budget of a four-year school, admitting a class of 64, as $2,683,140. "These budgets do not reflect the costs of operating teaching clinics and hospitals." On the basis of the above, the per-student cost is, therefore, $10,481 per year.

	Rumor	*Fact*
Failures:	25 per cent	5 per cent

We have had, in the past ten years, 5 per cent failures, and 6 per cent withdrawals, many of which occur in the first two weeks of school, making a total of 11 per cent. This compares favorably with the national average of 11 per cent student loss. We report each year the students not successfully completing the year. Many of these, however, are allowed to repeat the year, or a semester. In all cases, these students have succeeded, transferred, and received their medical degrees. Therefore, the American Medical Association figures do not truly reflect the ultimate outcome of our "failing" students.

	Rumor	*Fact*
Out-of-state students:	We are flooded	10 per cent (1962-1963)

In the past ten years, we have admitted 53 out-of-state students, 13 per cent of our first-year admissions. In only 3 states was a higher number of residents, per 100,000 population, admitted to medical school in 1961. We admit 4 times as many as Nevada admits, and 25 per cent more than Montana and Idaho, states with no medical schools.

The medical school at the University of North Dakota is a fully accredited two-year school of medicine. We admit 40 to 44 first-year students each year, of which all but 4 are North Dakota residents. We transfer about 35 students after the end of their second year. Exactly one-third of the practicing physicians in this state are our graduates.

In addition, we teach 30 graduate students (studying for an M.S. or Ph.D. degree to prepare them for teaching in college or medical school), 15 third-year medical technology students, and 200 students enrolled in undergraduate colleges. These latter are university and St. Michael's nurses, occupational therapy students, social work students, home economic majors, and physical education majors.

Our research program is supporetd entirely from outside sources. No faculty member receives money for research. We do have 3 research professors paid entirely from grants.

We have heart, cancer, and mental health teaching grants totaling $37,500 each year. Anatomy and biochemistry have graduate training grants.

The Ireland Laboratory addition of $447,000 is being paid for 100 per cent by a federal construction grant.

Summary of grants (for this year only): teaching grants, $123,216; faculty teaching grants, $46,124; research grants, $149,086.76; and construction grants, $623,944.27. Total grants: $942,371.03.

Governor's Health Planning Committee

The State Health Planning Committee is composed of various representatives of state agencies; they are appointed by the governor. Included in this committee are 4 physicians: Dr. James Amos, state health officer; Dr. T. H. Harwood, Dean, School of Medicine; Dr. L. G. Pray, representing the American Academy of Pediatrics; and the writer, representing the state medical association.

Two meetings were held in the year. The meeting in July 1962 was primarily the formulation of percentage allotments of federal funds to nursing homes and hospitals that were planning additional construction. At the November meeting, proposals were heard on projected hospital expansion or replacement plans from several hospitals throughout the state. Funds were granted for additional hospital construction to St. Luke's Hospital, Crosby, and for the Lutheran Home for the Aged, Minot. There are 4 hospital projects in the approved and in the active stages of getting ready for contract awards; namely, the neuropsychiatric unit at Fargo, the heart surgery unit at Trinity Hospital, Minot, and the hospital projects at Wishek and Watford City.

The writer has only the highest recommendation for Mr. Goplin of the State Health Department planning division, who keeps a very accurate and close check on the hospital needs throughout the state and particularly in the field of nursing homes and who has been watching closely so that no one area becomes overbuilt so far as nursing homes are considered. It is this member's feeling that great thought and care has been given by the state health planning commission in the allotment of federal funds for aiding hospital construction, the allotments being given where the need has been greatest with priority to those having the greatest need for remodeling.

G. A. Dodds, M.D., Member

Committee on Cardiovascular Diseases

The Committee on Cardiovascular Diseases has had no formal meetings during the past year but has kept close liaison with the North Dakota Heart Association and its activities.

Robert D. Story, M.D., Chairman

Committee on Emergency Medical Service

The Committee on Emergency Medical Service was called to order by the chairman at 8:15 P.M., on December 7, 1962, at the Gardner Hotel, Fargo. Only 2 members of this committee, with the chairman, were present, curtailing the amount of business to be accomplished. In view of the response and apathy to this phase of medical activity, it is recommended by this chairman that possibly a whole new committee with a different approach be appointed or the committee cease to function.

A report of "The Medical Self-Help Program" implementation was made by the chairman. This indicated that where the doctors were willing to start the first course, the program is a huge success, but where the doctors refused to be involved, the program is dead and unable to get started. At the time of this meeting, more than 1,000 civilians had completed the course and new classes are being organized all the time.

The implementation of a hospital program for civilian defense was discussed, and it was agreed to leave this phase dormant until the hospitals themselves seem to be interested.

The last item of business was a discussion of working with the State Health Department in the implementation of the medical phase of civil defense, if and when this help is sought. It was duly explained the part the Public Health Department has been charged with in the civil defense phase. It has been recommended to Dr. Amos that one individual be procured by the department to work on the medical phase of civil defense or it will probably not progress very far.

A discussion followed on the projected plan for an exercise in civil defense with the use of a portion of the E.C.D. Hospital with the reserve military and the senior students of the medical school in the month of March. The schedule as projected at this time will be: (1) January 29, disaster plan and organization; (2) February 5, sorting psychological casualties; (3) February 12, burns—mechanical injuries; (4) February 18, CVDEH; (5) February 26, planned use of ECDH and assignment of personnel; and (6) March 3, civil defense exercise using 20 casualties made up with use of moulage.

R. E. Mahowald, M.D., Chairman

Advisory Committee to the Multiple Sclerosis Society

There has been no formal meeting of the Advisory Committee to the Multiple Sclerosis Society. Our only activity was discussing some of the problems with Mr. Don Albertson of the Multiple Sclerosis Society of North Dakota.

Robert R. Ivers, M.D., Chairman

Report of the Delegate to the American Medical Association

The 1962 annual session of the American Medical Association was in Chicago, and the clinical session was in Los Angeles. At both of these sessions, the House of Delegates dealt with a number of perplexing problems mainly concerned with the social and economic changes developed in this country during the past three or four decades. There is in the membership of the House, as there is in our profession, a marked diversity of opinion as to the proper method of meeting these various challenges. There are a substantial number of doctors who feel that every effort should be made to go back to the so-called "good old days" when the doctor was an individualist with the last word in all matters affecting the care of the patient. There are others, probably a majority, who feel that we must, as a profession, adapt ourselves to social and economic changes without sacrificing the independence and dignity of our profession. There are a few, but perhaps an increasing number, who feel that we should join wholeheartedly in all manner of social changes so that the profession would become entirely subordinated to the desires of the masses, politicians, social workers, and others. This divergence of opinion as to the proper role of the physician in a rapidly changing national and world situation makes it oftentimes difficult to make clear-cut decisions on many of the matters presented to us for action.

During the past three decades of my activity in this field, it is my impression that the doctors have performed best in those areas in which they have assumed most responsibility for, and direction of, various programs. Thus, in general, prepayment insurance today is highly effective, a recognized part of the American scene and acceptable to both patient and the profession. Doctors, from the start, have been the main force in directing this trend. On the contrary, in the field of medical education, the practicing physician has, for one reason or another, relinquished responsibility to the full-time educator. Thus, it is open to question whether the type of education being given to future doctors is that which will best qualify them for the private practice of medicine. Again, doctors in North Dakota, particularly, have co-operated with and exercised direction in public health and welfare programs. This has resulted in mutual benefits. Many other examples could be given of instances where active direction by the profession has resulted in good programs and others in which the profession has failed to assume major responsibility, with resulting patterns which are perhaps not in ours or the patient's best interests.

During the past years, these reports have always referred to various efforts made by nonmedical interests to control medical practice in this country. This group, consisting mainly of nonpracticing physicians in administration, education, government, and labor, plus many nonmedical persons in the same fields, continues to be active. Their main thesis is that consumers, third-party payers, and social welfare groups should be able to set up rules under which the "quality of medical care" and the efficient utilization of services can be judged.

Currently, the attempt to control the private practice of medicine is being concentrated in the area of "quality of medical care" and "utilization of medical and hospital services." The theory is being advanced by this highly vocal and, in some circles, influential group that the profession should not have the final word as to the kind of medical care and the amount of medical and related services people should have. A part of the current program is to try to downgrade the profession in the public eye by pointing out its deficiencies in the area of quality of medical care, as defined by them.

An example of this is found in the recent "Trussel report" on care given to some members of the teamsters union in New York. The basic approach of this group is that criteria for good medical care can be set up by groups other than those giving the care and all care to be acceptable must meet their rigid specifications. There is no allowance made for clinical judgment, social and moral considerations, convenience of the patient and doctor, and innumerable other factors that make up the day-to-day practice of medicine in our so-far free economy. As with so many similar types of movements in the past, an aroused and active profession will be able to effectively counteract what is bad in such activities, providing they will inform themselves properly and act accordingly.

During the past year, the House of Delegates of the American Medical Association has dealt largely with social, economic, educative, and legislative situations. The complex subject of present and future medical education, its length of training, the difficulty in providing the number of interns and residents which hospitals could have or would like to have, and innumerable related subjects recur at each session.

At the clinical session last December, the report on compensation for residents and interns was presented by the Council on Medical Education and Hospitals and Council on Medical Service for consideration of the House to be finally acted upon next June. This report points out the financial problems inherent in the long period of postgraduate medical training, now almost universal. The report suggests that compensation for these trainees should be approximately equivalent to other university graduates of similar education. It suggests various methods by which money could be provided for increasing their income. Two suggested methods were that the fees derived from private patients under the direct care of residents be used for this purpose and that insurance, welfare, government, and other payments for the same type of service be used also. It was further suggested that a staff might wish to consider forming a staff partnership and being directly responsible for the hiring of residents and a portion of their salaries. These ideas have not met with general favor and, no doubt, will be debated at great length when again presented at the next session.

The association continues to oppose all legislation of the King-Anderson type and to urge the proper activation of the Kerr-Mills Law.

Because of the increasing responsibilities of the association, it was found necessary to raise the dues for this year.

It has been my privilege during the past three decades to serve the North Dakota State Medical Association and be honored by them by being entrusted with numerous offices. This has been a period of great change, and most of us of this generation have participated actively in directing, accepting, or opposing many of these changes. It has been a great source of personal satisfaction that I have been able to be associated during this time with the leaders of our profession in North Dakota and nationally.

During the past twelve years as your delegate to the American Medical Association, I have attended every session of the House. From 1950 to 1959, I served as a member on the Council on Rural Health. In 1959 I was elected to the Council on Medical Service, my present term extending until 1964. I hope to be able to continue as a member of this council. Since 1954 I have been a member and chairman of the Committee on Medical Facilities. During all this time, I have had the opportunity to serve on a great number of committees and to represent the association with related organizations. In June, 1962, I was the official representative of the American Medical Association to the Canadian Medical Association at their annual meeting in Winnipeg.

In concluding my term of office as your delegate, I would like to express my deep appreciation for this opportunity to be of service to the profession. I would also like to thank the members and the executive staff of the North Dakota State Medical Association for the many kindnesses and the spirit of cooperation which they have extended to me, not only in the past twelve years but in prior years of service. I would ask that you continue to extend this enthusiastic cooperation to my successor, Dr. Tom Pederson, who, I believe, is eminently capable of effectively representing North Dakota medicine nationally.

WILLARD A. WRIGHT, M.D., Delegate

Report of Representative to the Crippled Children's Services Division Public Welfare Board

The annual meeting of the medical advisory council on the Crippled Children's Services Division was held on November 24, 1962, in Bismarck. The following members of the medical advisory committee on Crippled Children's Services were present: Drs. James R. Amos, Bismarck; B. J. Clayburgh, Grand Forks; M. J. E. Johnson, Bismarck; James V. Miles, Jamestown, and Donald E. Skjei, Williston. Dr. Duane W. Nagle of Fargo was present by special invitation to discuss with the group the possible institution of a program for children and youth with hearing loss. Public welfare staff members present were Mr. T. N. Tangedahl, Miss Margaret Lister, and Mrs. Phyllis Wigen.

Dr. Nagle was asked to discuss some factors which he believes should be considered if the crippled children's program is to be extended to include the children and youth with hearing loss. A discussion included types of hearing aids, cost of hearing aids, and persons to be authorized to provide services. It was agreed that the firms or individuals supplying hearing aids should be contacted and an effort be made to secure a reduction of price on hearing aids to be purchased by Crippled Children's Services Division funds. It was generally agreed by the group that a hearing program should be instituted when funds are available and that it should be well planned and started slowly in order to avoid possible abuses in terms of service cost. It was suggested that after a period of time the effectiveness of the program and various factors again be evaluated.

The second order of business was the discussion of financial eligibility. The discussion of this matter appeared to indicate that the county welfare board consideration of all crippled children service applications would be continued and that generally this was satisfactory. There was some variation from county to county for various factors, and other means of financial assistance were not available in certain counties.

The third area of discussion was asthma. It was moved and seconded that the Crippled Children's Services Division program would not include surgical treatment of asthma as the results there have not been completely evaluated.

Dr. Amos presented a brief résumé of the prophylactic program currently sponsored by the North Dakota State Medical Association, North Dakota Heart Association, North Dakota Pharmaceutical Association, and the State Health Department. It was the consensus of the group that the Crippled Children's Services Division need not give further consideration to the inclusion of treatment of acute rheumatic fever under Crippled Children's Services Division.

The next order of business was the discussion of a medical center rehabilitation unit in Grand Forks. Dr. Clayburgh gave a short discussion of the care that the patients were receiving. After some discussion, it was felt that the Crippled Children's Services Division would continue to use both inpatient and outpatient facilities of this center on a selected basis.

The next topic of discussion was the availability of vendors taking assignments on insurance benefits. There have been occasional instances where the accounts of different vendors have been held up because of a vendor not getting an assignment of insurance benefits and the policyholder obtaining benefits and not applying them to his account. Dr. Johnson suggested that the vendor should be notified that it is his responsibility to collect insurance benefits and that Crippled Children's Services Division responsiblity is limited to the balance of service not covered by medical insurance.

The Crippled Children's Services Division budget to be submitted to the 1963 Legislature was next reviewed. Mr. Tangedahl presented the budget and some discussion was made concerning different items. There is a new item requesting $15,000 to initiate a program for children with hearing loss. The budget also provides for $3 factor for surgical service to go into effect July 1, 1963, if the budget is approved by the Legislature as submitted.

Treatments and control of convulsions in relationship to cerebral palsy was next discussed by the group. At the present time, the treatment and control of convulsions is not included in the services available under the Crippled Children's Services program for children with cerebral palsy. It was thought that the treatment of convulsions was a rehabilitative part of cerebral palsy. The care of convulsions associated with cerebral palsy by the general practitioner will be authorized under the Crippled Children's Services Division, if it is recommended, and under the supervision of a specialist. It was decided that the authorization for specific care of the treatment of convulsions would be left to the discretion of the medical director of the program. Dr. Paul Johnson clarified that this would not include provision for medication but would include the medical supervision of such.

There was next a brief discussion of how the Crippled Children's Services Division could handle charges for procedures not included in the relative value fee schedule. It was suggested, with procedures not specifically listed, that an allowance be determined by the medical director of the program in terms of the unit allowable for comparative procedures.

Donald E. Skjei, M.D., Representative

Dr. E. J. Larson, retiring president of the state association, was presented.

His address follows:

"Mr. Speaker, members of the House of Delegates, and officers of the North Dakota State Medical Association.

During the past several years, an ever-increasing interest is being shown in the medical profession and the practice of medicine. The general public, writers, publishers, television, movies, and politicians as well have all taken part. Some of this publicity is favorable and some very unfavorable. It is difficult, at a time when our profession is maligned, to retain our equanimity. What can we do in a positive way to improve this untenable situation? It appears that one of the best ways would be to improve ourselves. Great men such as Sir William Osler, Shakespeare, and those in the Holy Scriptures have taught us much about humility, compassion, charity, and patience. These are some of the characteristics of the Great Physician that people like to see in us today.

I would like to see an educational program that would be consistently carried on from year to year. Part of this should be national in scope and carried on by the American Medical Association. Part of it could be statewide and carried on by our state association, and a third part could be local and carried on by our county or district societies. I believe this could be very effective in many ways, one of which is that it would put us in a better position to make full use of the news media in times of urgent crises. Milton has suggested that we should never hesitate to let truth grapple with falsehood.

There is in medical education today a definite movement toward full-time instructors and teachers, with a strong leaning toward research. This is certainly a commendable movement, provided it doesn't go too far and too fast so that not enough of our young physicians are properly inspired and trained in the care of the sick. We must maintain a close association not only with our own school in Grand Forks but also in the schools we attended as students; they need us just as we need them.

There are over 800 vacancies in our medical schools today. This is in the face of a very rapidly developing profession and a growing population. The American Medical Association has outlined several programs by which we can meet students in high school, invite them to our offices and to our hospitals to inspire and encourage them to enter our profession. Nothing could do more to protect our nation from the quacks and the irregulars than an adequate supply of well-trained young men and women of high character and integrity being available each year to meet our country's needs.

The job of our profession is to take care of all health needs of all the people from birth until death. In this scientific age there should not be any place for the cultist or the quack. In the Scandinavian countries and Scotland, admission to medical and nursing schools is eagerly sought. The medical profession stands very high and properly so. It is interesting to note that in these countries there are no cultists or quacks. In encouraging and assisting young men and women to enter our profession, we are fulfilling one of our highest ethical duties and our rewards will be many, not the least of which will be a deep sense of joy and personal worth earned through the performance of a purely unselfish act.

The American Medical Association is a very large and effective organization; it has many programs we can use. Their implementation, however, depends upon the individual physician, and unless these ideas are brought home to each of us and we are inspired to act, the results will be indifferent. I should like our societies to make greater use of our delegates, our councillors, and our committee chairmen who have attended several American Medical Association institutes and are well informed on these subjects. I hope the program chairmen will keep this in mind.

Two new programs were started last year: AMPAC and COMPACT. These organizations have already proven their worth and should have our full support this coming year. We can be proud of our voluntary insurance program. These have done a good job. However, it is well for us to remember that there will always be those who will have to depend upon others for financial aid that only the government can supply. It is the duty and privilege of the medical profession to provide the proper assistance and leadership in developing these programs.

I would like to congratulate the ladies' auxiliary. Under the aggressive leadership of Mrs. Jansonius, they have had a very active year and have proven themselves very effective, all along the line. The auxiliary is a potent force for good, and we should help and encourage it in every way we can.

I am concerned about a situation known as "splintering." This is a tendency for our physicians to divide into small groups according to their specialties. The profession of medicine is an honorable one, but no group or specialty is more honorable than another except as the members, through sheer excellence, integrity, and capability, may bestow honor and dignity upon themselves. Our strength lies in the unity of our societies and the entire profession. We should always remember that each physician is really his brother's brother.

It has been a privilege to serve the association as president. I want to thank everyone who has been very helpful this past year, especially the staff at Bismarck and my committee chairmen."

Speaker Christoferson expressed gratitude to Dr. Larson for all of the time spent and the excellent job accomplished under his capable leadership as president of the association. He then called on Dr. A. R. Gilsdorf for his inaugural address.

His address follows:

"Doctor Christoferson, President Ernie Larson, guests, and fellow members of the North Dakota State Medical Association.

Thank you, Dr. Larson, for giving so much of yourself to our association and to medicine for so many years, and thank you, especially, for the past year's leadership as president of this association. I also personally thank you for the stimulation and guidance you have given me. I wish to commend the programs and principles promulgated by my predecessors. Let us supplement, not replace them.

In taking office as president of this association, I do so with a great sense of humility. I greatly appreciate the honor you have bestowed upon me. I also appreciate the great responsibility that goes with the office of president and shall strive to do what I think is best for medicine and for our people.

In assuming the presidency of this association, one feels compelled to develop some sort of plan or platform, but I have been unable to evolve anything dramatically new. I do feel, however, that there are various items on which we should place special emphasis.

1. First and foremost again, public relations. This is not a commodity which can be purchased. No one can do it for us but our individual selves. We are very fortunate in having a fine public relations committee from both medical and administrative aspects, but this committee can give us guidance only. We traditionally demonstrate deep concern in matters of life, health, and death. We must strengthen another link in our faith: greater concern for the people's welfare, greater desire to help and serve them. We must also believe in cooperation with individuals and society as a whole. We cannot practice faith in humanity behind a professional iron curtain, in a scientific ivory tower, a social vacuum, or an economic jungle. The true image of a physician is created when he is treating, advising, or visiting with his patient wherever this may be. He must give the patient time, sympathy, and courtesy. He must show concern for his welfare. He must respect the patient's concern for his economic worries on health and medical care. He should be prepared to answer the patient's questions and aid him on these matters.

2. Let us reconsider our place in society. We are citizens first and then physicians. This does not imply that we should retard our advancements professionally, but that we should never forget our obligations to our people and nation. In many countries, the bulk of medical meeting activity centers around politics and economics. In the United States we find this painful, but we also find it becoming more and more necessary. The American Medical Association code of ethics has been liberalized, allowing us to carry our message to the people without it being considered advertising and unethical. It is now considered our obligation to participate in public medical education and medical economic education by public appearance.

3. We must be willing to go along with the social and economic changes of the times. Free-lance medicine, as we have known it, is not being well accepted by this modern day society. Prepayment medicine and suggested fee schedules are the reality of public demand. There is

an honest fear of catastrophic medical and health expense among our people generally, not just those of low financial security. If we doctors cannot develop acceptable and progressive plans to satisfy this desire for prepayment medical protection, our politicians will attempt it and will come forth with plans which certainly will not be satisfactory to medicine.

I wish to read you some abstracts of an article titled, 'Disillusioned: The government is not honoring the spirit of the Saskatchewan agreement,' published February, 1963, by H. D. Dalgleish, M.D. Dr. Dalgleish led the boycott in September, 1962, against government medicine in Saskatchewan. 'Last summer, after a bitter controversy which culminated in a twenty-three-day boycott, the Saskatchewan government agreed to significant changes in its Medical Care Act and thereby allowed doctors in the province to resume normal patient care.' 'We find that the new legislation is subject to an interpretation which changes the intent of the act. The government can, and actually does, make changes in the act by orders in council.' 'After a great deal of delay we are able to appoint 3 doctors to the commission, but they are in a minority.'

Between 75 and 90 per cent of the claims presented directly to the government by doctors or their patients have been paid, but less than 50 per cent of claims made by voluntary agencies to the government have been processed.

'At the present time, the commission has refused to pay for x-ray services in doctors' offices. To be paid, these doctors must place themselves under the direction and inspection of a hospital, thus becoming "employees" of the hospital. This problem is still unresolved and these doctors are in a bad way, competitively, because the hospitals provide diagnostic services without charge to the public. The government is literally forcing private diagnostic facilities to close in some areas.'

I believe we have learned some valuable lessons by watching the progress of medicine in Saskatchewan, and this should make us think more deeply of unified coordination and action to prevent us from getting into the same situation.

4. We must help tell the public the truth on Kerr-Mills legislation. We must tell them how a properly implemented Kerr-Mills Law can be the cushion against calamitous medical expense. We must help our legislators implement adequate Kerr-Mills legislation. We must expose intended sabotage of existing Kerr-Mills legislation by those who insist on the social security approach.

On the other hand, we must inform the public regarding the shortcomings and inadequacy of King-Anderson type legislation. We must inform them that the Murray-Wagner-Dingell Bill of the years 1949-1952, the Forand Bill of 1957, and the King-Anderson Bill of now are politically inspired, emotionally based, deceptive devices of opportunists and poorly informed politicians, or both. Help show the public the enormous costs of these programs in other nations and the expected cost here. Show that the wealthy may have their bills paid by the sweat of young workers when such aid is unnecessary. Show them that medical progress and care is deteriorating where government plans are in effect.

Remember, 1963 is not a year to sleep on legislation nationally or locally. The opposition is building up its resources and getting its second breath. Political participation is hard work and not seasonal. Do not attempt to leave it up to our legislative committee and those conscientious volunteers of the past who have shown much fatigue and some discouragement after the last North Dakota legislative session.

5. We should strive for improved intercommunication and liaison throughout our state association. We have considered sending the Handbook for the House of Delegates to each paid member, but the cost would be exorbitant. On the other hand, we all pay for and receive The Journal-Lancet, our official state medical journal. It publishes the transactions of the North Dakota State Medical Association and proceedings of the North Dakota Women's Auxiliary, annually, in the fall issues. Let us not forget to read this material.

Let us make it a part of all district society meetings to regularly include reports from those doctors who serve as officers and representatives outside of the local societies.

6. Let us stimulate closer relationship between religion and medicine in order to better provide health care for 'the whole person.' The American Medical Association has created a new Department of Medicine and Religion. Pilot programs have been instituted in several states. The plan is to establish state leadership teams of physicians and clergymen, incluing psychiatrists and hospital chaplains.

7. Let us see what we can do with our mental health problem. Can we improve the situation without becoming too involved politically? We cannot ignore this challenge. Let us hope we physicians can develop a united front on this issue.

8. Let us support our American Medical Association more openly. We individually are the American Medical Association. It is not a power combine in which the individual member has no voice, as our political opposition would like to have us believe. The old axiom of 'split and conquer' is one of their tools. Be on guard against it. 'Love your doctor but hate the American Medical Association' is a typical propaganda expression the socializer loves. Let us stand up and be counted as contributing American Medical Association members. The headquarters office of the American Medical Association in Chicago is anxious to try to help all of us in any way they can. All we have to do is ask them.

In closing, I would like to leave with you a bit of the philosophy expressed by the great writer and educator, Edward Everett Hale:

'I am only one, but I am one.
I can't do everything, but I can do something.
And what I can do, that I ought to do.
And what I ought to do, by the grace of God, I shall do.' "

Speaker Christoferson thanked Dr. Gilsdorf and added that the members of the association look forward to a year of continued progress under his direction.

Secretary Buckingham was asked to read the names of the members of the Nominating Committee. The members are as follows: Drs. C. M. Lund, Frank Naegeli, R. Mahowald, Dr. Christianson and Dr. M. E. Nugent.

Dr. Christoferson: "About thirteen years ago I visited Fargo and I met a fine, gray-haired gentleman who took time out of his busy day to talk to me. I met him again that evening and called him by the wrong name. Since then I feel I have become a close friend of this man. It is my pleasure to introduce Dr. Kent E. Darrow. Dr. Darrow attended Fargo High School and the North Dakota Agriculture College. He then attended Johns Hopkins University and graduated from there in 1913. He interned at the Seattle City Hospital and was licensed to practice medicine in 1915 in North Dakota. He has contributed to that practice ever since. He comes from a long line of distinguished physicians and numbers among his brothers some of the most outstanding physicians. He is an outstanding physician himself, and I think we could all take him as an example to follow.

He has consistently treated his patients kindly, never shirked his duty as a physician, and he has always been able to see the good in people. I have never heard Dr. Darrow talk about his colleagues unless he says something good about them. I feel this is an outstanding and creditable characteristic. He has been a very capable physician. He has distinguished himself in surgery and urology and he has set up something that we could all do well to emulate."

Dr. Larson was then called upon to present the Fifty-Year Award to Dr. Darrow of Fargo, North Dakota.

Dr. Larson: "It is with a great deal of pleasure, Dr. Darrow, that I present you with this fifty-year certificate and pin. You have fully earned this award by the fifty years in which you have bestowed honor and respect on the medical profession. It is such a pleasure to have you here today."

Dr. Darrow: "Thank you so very much. I feel I represent eighty-five years of practice, and I hope it will go on to be over one hundred years."

The chair asked for a motion to convey greetings to a past-president of the association, Dr. Spear of Dickinson, confined to his home by illness. The motion was made and carried.

MOTION

At the first session of the House of Delegates of the North Dakota State Medical Association, May 4, 1963, at Dickinson, North Dakota, a motion was made, seconded, and passed unanimously that the sincerest of greetings be conveyed to Dr. A. E. Spear of Dickinson from the members of the House, council, and officers of the association.

Many of Dr. Spear's friends in the association were present and the newer members of the House were duly enlightened as to the positions that he held with the association, and Dr. Spear's excellent performance in fulfilling these duties.

Secretary Buckingham next read the following correspondence:

The Missionary District of North Dakota
809 Eighth Avenue South, Fargo, North Dakota

"The Bishop and Council of the Episcopal Church of North Dakota wishes to express its concern relative to the mental health treatment facilities in our state.

We appreciate the efforts that the North Dakota State Medical Association has expended to improve the quality of mental health care. We look to you for continued leadership in this area.

We share with you a real concern for the mentally ill in our state, and for their ultimate rehabilitation."

Sincerely yours,
(Signed) Ralph W. Black,
Executive Secretary

Speaker Christoferson announced that the House of Delegates had received several resolutions from the council and that these would be given to the Committee on Resolutions for their study and report.

The speaker then asked that Dr. Dahl, the vice-chairman of the Reference Committee to Consider the Reports of the Standing Committees, take over as chairman of that committee. He added that he was very sorry not to be able to seat Dr. Countryman, but would appreciate his sitting in on this committee and give them the benefit of his previous experience with this work. He invited all members of the association to appear at these committee meetings to discuss any matters of particular interest to them.

Dr. Dahl: "I would like to suggest to this body, or the Committee on Resolutions, that a change in the constitution and by-laws be placed in effect so that the House of Delegates could meet twice a year, at least in the even-numbered years. The Legislative Committee is a difficult committee on which to serve, and it is becoming more difficult each year. The decisions were easily made by this committee in past years, but it has become more and more difficult recently, as there have been too many bills to check. The committee needs the help of the House of Delegates to decide on certain bills. I think the state association should endorse and write the bills that they want introduced. At the present time, the Legislative Committee meets in May, and eight months later the Legislature convenes. That is a poor way to run a legislative committee for a group of this size and importance. I would like to suggest, if it does entail a change in the by-laws, that the House of Delegates meet in November, as soon as the election is over. This would give the Legislative Committee two months to make up bills that the Association wants."

Speaker Christoferson advised that any member of the association had the privilege of recommending a resolution to the Committee on Resolutions.

Dr. Nugent suggested that anyone desiring to present a resolution should have it written up before presentation.

The first session of the House of Delegates adjourned at 4:00 p.m.

(The transactions will be continued in subsequent issues)

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Book Reviews . . .

Clinical and Experimental Hypnosis

WILLIAM S. KROGER, M.D., *1963. Philadelphia: J. B. Lippincott Co. 361 pages. $12.50.*

The author, Dr. Kroger, formerly Associate Professor of Gynecology and Obstetrics, Chicago Medical School, has been practicing the art and science of clinical hypnosis for the past thirty years. He has contributed many articles to the literature on hypnosis and, as a practicing physician, teacher, and lecturer, is well qualified to present such a monumental piece of work.

There have been many books on hypnosis written since Moll wrote his classic *Hypnotism* in the latter part of the nineteenth century. Few have been good; Dr. Kroger's book is one of the better ones. Each chapter has a lengthy bibliography and reference section showing good background and study.

The author has attempted to write 3 books in one, however. Although he has done magnificently, the busy physician will find it difficult to wade through the wealth of material in the book. Like every other book on hypnosis, it begins with the history of hypnosis. Something should also have been said about the men who in the past twenty years have contributed so much to the advancement of modern clinical and experimental hypnosis.

The first third of the book is devoted to theories, conceptions and misconceptions of hypnosis, induction techniques, indications and contraindications of its use.

The author is constantly cautioning the student to refrain from any stage display of hypnosis, yet he recommends that the patient be instructed that he will enter the hypnotic state when touched on the right shoulder by the physician. This touching the right shoulder seems to drift back to the times of Mesmer, or even biblical times with the "laying on of hands," and is to me a reversal into outdated methods or techniques.

After 2 brief chapters on the religious attitudes on hypnosis, the psychodynamics of hypnosis is discussed. I liked his theoretical approach.

The chapter on semantics is brief. This is one chapter in the book where the author could have contributed a great deal. We missed a real discussion on this subject, because verbalization is so important in the practice of the healing arts; we all know how patients improve or fail to respond to treatment because of what is said in their presence.

The author then proceeds to discuss the various conditions in which hypnosis seems to have been beneficial. A list of some of them are cardiovascular disorders, gastrointestinal disorders, obesity, asthma, allergy, surgery and anesthesiology, dermatology, physical rehabilitation, neuromuscular disorders, ophthalmology, otolaryngology, rhinology, genitourinary disorders, oncology, pediatrics, orthopedics, alcoholism, insomnia, narcotic addiction, and a host of other miscellaneous conditions. A case report is used to illustrate the use of hypnosis in each situation.

He is at his best in his paragraphs on obstetrics and gynecology. Here he gives the reader the benefit of his knowledge and experience. Here he presents a practical "how to do it."

The research team on the use of hypnosis at the University of Minnesota Medical School under the direction of Dr. Owen H. Wangensteen, Chief of the Department of Surgery, did not get all the results the author reports. We failed completely with obese patients. We concluded that there were psychogenic factors involved and we were not prepared to treat them. Dr. Kroger does not discuss the use of hypnosis in proctoscopic examinations. It was here that we had our best results. Patients who could not have been previously examined except with the use of drugs or chemical anesthesia responded excellently to hypnoanesthesia. In fact, our proctologist remarked that the endoscope literally "fell into place" while making the examination.

The paragraph on hypnodontics was written by Aaron Moss, D.D.S., and is a digest of a book written by Dr. Moss. However, we do not believe that the use of hypnosis enhances the prestige of a dentist any more than the use of any other therapeutic agent.

The book is hard, cloth covered, printed with 10-point type, and double columned with wide margins, which makes for easier reading. The binding could have been improved upon for a book of this size. More and better illustrations would have been welcome.

Although the book is intended for the beginner as well as the advanced student, the latter will find the book more to his liking. The author is to be congratulated on his presentation.

A. A. PAPERMASTER, D.D.S.
Fargo

A Primer of Cardiology

GEORGE E. BURCH, M.D., *third edition, 1963. Philadelphia: Lea & Febiger. 366 pages. Illustrated. $6.00.*

The third edition of this well-known book continues to satisfy all the requirements needed to ensure its continuing popularity. The author intends it for, among others, "medical students and beginners in cardiology." These might find it a bit more advanced than the title would indicate. It is probably more applicable as a text for those "who must learn initially the fundamental principles of clinical cardiology before approaching advanced cardiology."

The author wisely omits the subject of electrocardiography and emphasizes repeatedly through this book that it is not intended to be encyclopedic. This by no means detracts from the book's value, but rather adds to the concise manner in which "basic physiologic and hemodynamic" facts are correlated with clinical cardiology.

The book starts with a brief chapter on anatomic considerations and then goes right into the "approach to the diagnosis of heart disease." One might disagree with some of the author's "pathognomonic signs of organic heart disease," and, as this section is developed, he clarifies the fact that these signs are not always absolutely indicative that organic heart disease exists. The discussion of the cardiac history could have been expanded to have made it more informative and more in keeping with the complete section on the physical examination which follows it. As one might expect, Dr. Burch discusses heart sound, both normal and abnormal, at length. The inclusion of a discussion of the cardiac dysfunctions produced by psychoneurosis and the management of these disorders illustrates the importance of these conditions.

(Continued on page 18A)

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1. McCarthy, C. G., and Finland, M.: Absorption and Excretion of Four Penicillins, New England J. Med., *263:*315, 1960.

Additional information available upon request. Eli Lilly and Company, Indianapolis 6, Indiana.

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(Continued from page 16A)

The discussion of the therapy of arteriosclerotic heart disease might have been expanded upon, and some of the controversial measures such as anticoagulants, vasodilators, digitalis, and so forth, could have been discussed in greater detail. Cor pulmonale is deservedly a new addition to the discussion of the specific types of heart disease. The section on anomalous shunts, which is also a new addition, is a bit more complex than it need be for this type of book.

The section on bedside diagnosis of cardiac irregularities is an excellent one and is well illustrated. The appendix contains material referable to nomenclature and classification, heart size, diet, and incidence of heart disease.

This book certainly remains an excellent work for any student of cardiology. It is also of value for review type of reading for the more advanced student of cardiology. It is not meant to be a complete reference book, yet it could serve well as an abbreviated work to which one could refer for specific items of information regarding any of the more common and many of the less common types of heart disease.

MILTON M. HURWITZ, M.D.
St. Paul

The Management of Medical Practice

ALAN E. NOURSE, M.D., *and* GEOFFREY MARKS, M.A., *1963. Philadelphia: J. B. Lippincott, 387 pages. $9.00.*

This should be used as a textbook by the medical student in his senior year or by the intern or resident in his final year of training rather than by doctors who have made some of the mistakes mentioned in the book and have to read about them to recognize their errors. I have long felt that at some point in one's medical training there should be an attempt made to give a course in the socioeconomic factors involved in medical practice. Such a course, using a textbook like this one, would forestall a great many of the misadventures we all must experience. I further feel that an abridgement of this book would be of extreme value to any practitioner and I am sure it would prove very popular. The book in its present form could have been handled a little more concisely.

The arrangement of this volume is in seven parts, each part broken down into various specific points of interest. The introductory section was extremely interesting in analyzing the attitudes of the physician toward his practice and his patients, the fallacies he may acquire concerning his practice, and his failings in public relations. In addition to all of these negative ideas the section concludes with two positive sections on how to achieve a successful practice both from the economic and the philosophic point of view. One cannot read the earlier chapters without recognizing some of his own failings and those of his colleagues and realizing what time we waste in entertaining these fallacies. The second section deals with patient management, concerning the actual employment of one's time in caring for the patient, presentation of fees, follow-ups, recall, and so on. The third section further defines patient management as regards the specialist and the general practitioner. The fourth section deals with the location and type of practice one wishes for and I felt that this was especially well handled. The fifth section deals with the office management of the medical practice and, while it offers a great many ideas, many of them excellent, I feel that the authors could have done more work with this section. The sixth section deals with estate planning and personal finances, and I felt that this was handled very nicely, giving some basic lessons which all of us would have profited from had we known of them in the beginning. The final section deals with the implications of practice control and summarizes, I thought rather nicely, a philosophic approach to the problem of government intervention in our private practice. The ideas expressed by the authors I feel would be acceptable even to those doctors who do not feel that government medicine would be such a bad thing after all, and it presents arguments against government intervention which are rather refreshing to one who has been active in the fight against federal encroachment.

I would recommend the purchase of this book for use as a reference, especially for the physician starting out in practice and for the physician who is finding that his practice is not running as smoothly as he would wish. I would further recommend that the authors consider an abridgement of this text for use by the busy practitioner.

JOHN A. SWENSON, M.D.
Jamestown, North Dakota

Essentials of Healthier Living

JUSTUS J. SCHIFFERES, *second edition, 1963. New York: John Wiley & Sons, Inc. 361 pages. Illustrated. $5.95.*

Mr. Schifferes has great ability to write well in the field of medicine. The second edition of his book is packed full of the sort of information for which many of our elderly lay correspondents ask. They want to know more about their health, and they want to know what they can do in their later years to keep what health they have. For them this book should be very helpful.

WALTER C. ALVAREZ, M.D.
Chicago

Pediatric Methods and Standards

FRED H. HARVIE, M.D., *editor, fourth edition, 1962. Philadelphia: Lea & Febiger. 391 pages. Illustrated. $5.00.*

In this new edition of *Pediatric Methods and Standards*, Dr. Harvie presents, in a condensed format, factual information and test methods essential to the clinician in the management and treatment of infants and children.

The author includes in this edition relatively new material on such subjects as thyroid function tests, glycogen storage diseases, coagulation factors, leucine tolerance test, and many other topics of interest.

The concise, readable presentation and the tables, graphs, charts, and the references to source material facilitate the book's use as a ready reference for the house officer and the practitioner of pediatrics.

The clinician will find the subject matter in chapter 17 on "Water and Salt Metabolism and Therapy," "Drugs and Dosages" in chapter 21, and the section on poisoning in chapter 20 of particular interest.

This pocket edition can be of inestimable value to the advanced medical student, the intern, and resident, as well as to the physician.

I believe that this book has a place alongside the standard pediatric textbooks on the physicians' shelves and that it should be made available to the house staff on the pediatric floor.

SIDNEY S. SCHERLING, M.D.
Minneapolis

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News Briefs . . .

North Dakota

DR. ROBERT BUSHELL, obstetrician and gynecologist, is a new member of the Fargo Clinic staff. He recently completed a four-year residency in obstetrics and gynecology at University Hospital, Ann Arbor, Michigan.

* * * *

DR. JOHN M. MCMAHON, a Wisconsin native who obtained his medical degree from the State University of Iowa College of Medicine, has become a member of the department of internal medicine at the Dakota Clinic in Fargo. He has been an instructor in internal medicine at University Hospitals in Iowa City for the past three years.

* * * *

THE GUY AND BERTHA IRELAND RESEARCH CENTER at the University of North Dakota has grown in a decade from a small instrument room to a 5-story building with 25,000 square feet of floor space in open laboratory arrangement. The growth was made possible through a bequest by Guy L. Ireland, who was a cancer patient, gifts from Mrs. Bertha Ireland, and grants from the National Institutes of Health, North Dakota Medical Center, National Cancer Institute, and State Medical Center. Major laboratory equipment includes a $30,000 amino acid analyzer, a $32,000 electron microscope, a $30,000 analytical ultracentrifuge, and a gas chromatograph. The facilities are being used by 6 departments of the medical school: biochemistry, anatomy, microbiology, physiology, pharmacology, and pathology.

* * * *

TEN NEWLY ASSIGNED DOCTORS at the John Moses Air Force Base Hospital, Minot, are Maj. William Elliot, pathologist who was stationed at the air force hospital, Lackland Air Force Base, Texas; Capt. David A. Kammeyer of Detroit, psychiatrist; Capt. Waldo Merriam, a 1961 graduate of Tufts University School of Medicine, Boston, internist; Capt. Burton Alter, general surgeon from Boston City Hospital; Capt. Michael Kemper, a member of the outpatient clinic; Capt. John Brassel and Capt. Donald Tomlin, members of the department of obstetrics and gynecology; Capt. James Worley, in the department of pediatrics; Capt. Donald Forman of New York City, a member of the department of orthopedics; and Capt. Thomas Scherschel, chief of surgical services.

* * * *

DR. JAMES BISHOP of Regina, Saskatchewan, has arranged to take over practice of the late Dr. J. A. MacDonald in Cando.

* * * *

DR. JOHN WONG of New West Minster, British Columbia, has entered practice in Killdeer. He was an intern in the Children's Hospital, Winnipeg, and also practiced in Brandon, Manitoba.

* * * *

DR. JAMES A. BARNES is a new member of the Medical Arts Clinic in Minot. Dr. Barnes has been chief of pediatrics at Memorial Hospital, McDowell, Kentucky, for the past two and one-half years. He also served on the board of directors of the Miners Memorial Hospital Association in McDowell and as president of the Memorial Hospital medical staff. A member of the American Academy of Pediatrics, he was graduated in 1953 from the Bowman Gray School of Medicine, Winston-Salem, North Carolina.

* * * *

DR. T. L. STANGEBYE, JR., a diplomate of the American Board of Internal Medicine, has left the Quain and Ramstad Clinic in Bismarck to enter private practice at Roswell, New Mexico. He will be associated with the Marshall Clinic in Roswell. Dr. Stangebye was on the staffs of the Bismarck and St. Alexius hospitals.

* * * *

DR. DANIEL MERGENS has joined the Hazen Clinic after practicing at Hillsboro. He is a 1953 graduate of Creighton University School of Medicine, Omaha.

* * * *

DR. EMIL T. KELLER has announced a move from Rugby to White City, Oregon. He will be a member of the geriatrics department of the Veterans Administration Hospital in White City. Dr. Keller has been associated with Rugby's Johnson Clinic since 1941.

Minnesota

DR. STANLEY M. GOLDBERG has joined Dr. Howard M. Frykman in surgical practice at Minneapolis. Dr. Goldberg recently completed six years of residency training in his specialty, surgery for diseases of the colon and rectum, at the University of Minnesota and now is a clinical instructor in the department of surgery at the university. A 1956 graduate of the University of Minnesota Medical School, he is a former American Cancer Society fellow with training in colonic and rectal surgery at St. Mark's Hospital, London.

* * * *

DR. DAVID E. MARTIN, general surgeon, is a new member of the Community Clinic in Wabasha. He succeeds Dr. Johannes Leonhardt. Dr. Martin has served on the faculties of Tufts University School of Medicine, Boston, and the University of Nebraska College of Medicine, Omaha. He has been associated with the Veterans Administration Hospital in Omaha for the past year. Dr. Martin has written research papers on organ transplantation and arteriosclerosis.

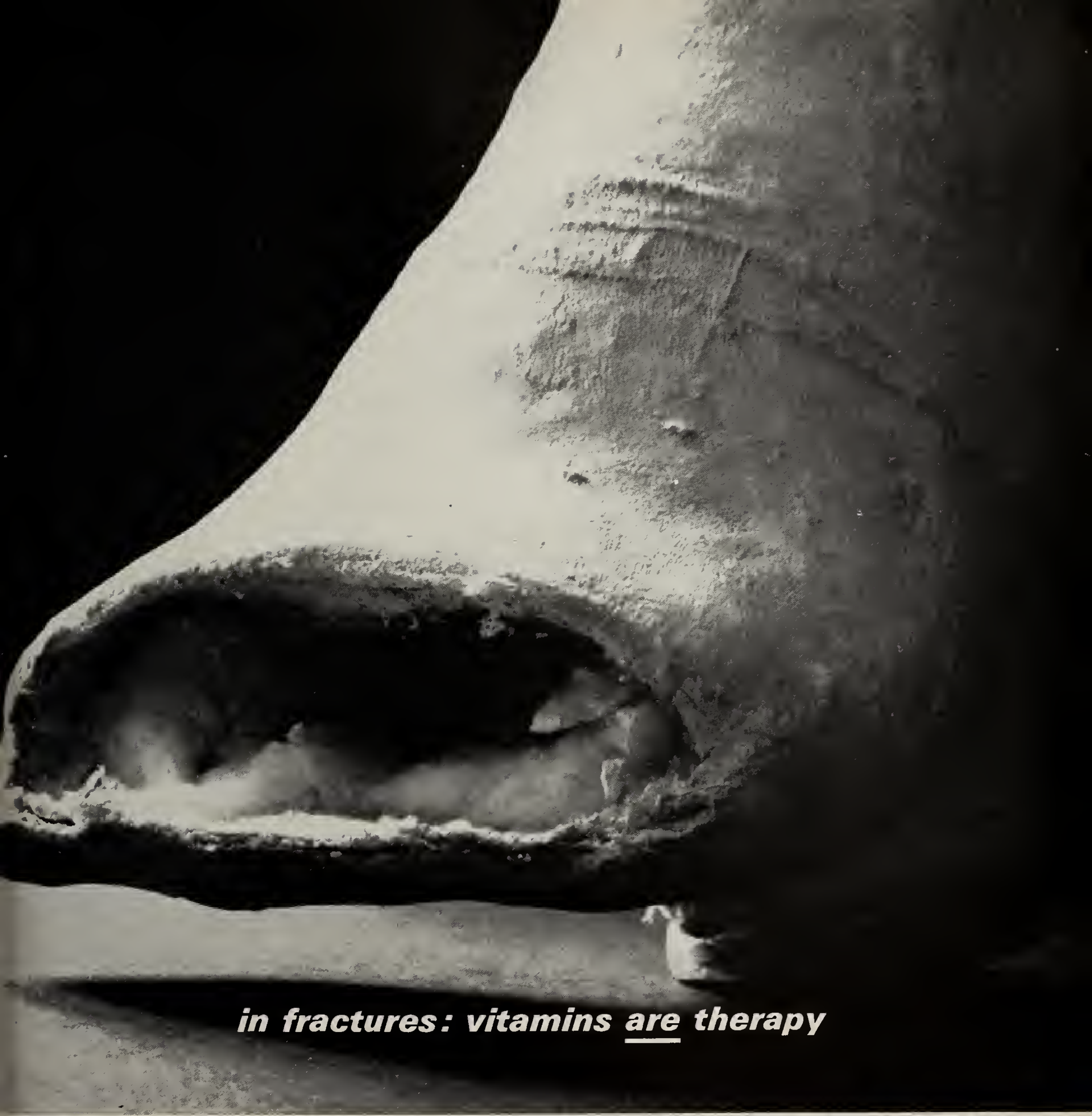
* * * *

DR. J. W. STRAND of St. Paul has announced a move to Jasper. A graduate of the University of Minnesota Medical School, he has practiced in St. Paul for the past ten years.

* * * *

DR. VERNON L. LINDBERG, Minneapolis, ophthalmologist, participated in a medical teaching mission at Mohulpa-

(Continued on page 22A)



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(Continued from page 20A)

hari Christian Hospital and Rajadijhi Christian Hospital in India this fall to demonstrate surgical techniques for correcting eye defects.

* * * *

DR. WILLIAM E. MACKLIN has moved to Litchfield. He left Litchfield in 1943 to serve in the United States Navy Medical Corps. Later, he became a radiologist at the Mankato Clinic and a consultant to the hospitals in Willmar and surrounding area.

* * * *

DR. D. H. PETERSEN, general practitioner in Northfield, has accepted an appointment as acting director of alcoholic and drug addiction treatment programs at Willmar State Hospital. He is a graduate of the University of Minnesota Medical School.

* * * *

DR. JOHN LEE SANDER, a native of Detroit Lakes, has joined the Cambridge Clinic. He has served two years in the United States Air Force and four years in surgical residency at Charles T. Miller Hospital, St. Paul. Dr. Sander is a 1956 graduate of the University of Minnesota Medical School.

* * * *

DR. J. R. MC NUTT of Duluth is retiring after thirty-three years of practice in radiology at Superior, Wisconsin. Dr. Robert Mann of Superior is succeeding him as a member of St. Mary's Hospital staff. Dr. McNutt, a diplomate of the American Board of Radiology, is a member of the American Medical Association, Minnesota State Medical Association, American College of Radiology, American Roentgen Ray Society, Radiological Society of North America, Interurban Medical Society, and St. Louis County Medical Society. He was graduated from the University of Michigan Medical School in 1916.

* * * *

THE UNIVERSITY OF MINNESOTA Center for Continuation Study will offer the following short courses in medicine between September 1963 and June 1964:

September 30—October 2, Pediatrics; October 10-12, Dermatology; October 21-23, Pediatric Neurology; November 4-8, Neuroradiology; November 20-22, Ophthalmology (Refraction); November 21-23, 2 courses, Cardiovascular Diseases and Orthopedic Surgery; December 6-7, The Painful Back; January 6-10, Electrocardiography (Intermediate); February 10-14, Proctology; March 9-11, Psychiatry; March 17-20, Internal Medicine; April 3-4, Trauma; April 23-25, Gynecology; May 4-6, Ophthalmology; May 14-16, Surgery; May 27-29, Otolaryngology; June 3-5, Anesthesiology. Information is available at Center for Continuation Study, General Extension Division, Minneapolis, Minnesota 55455.

* * * *

DR. HELEN L. KNUDSEN of Minneapolis was initiated as an honorary member of the American Hospital Association during the organization's 65th annual meeting in New York City. Dr. Knudsen is director of the Division of Hospital Services, Minnesota Department of Health, and a lecturer at the University of Minnesota School of Public Health. The honorary membership was conferred in recognition of her outstanding contributions in the health field. She served on the AHA Committee on Hospital Planning from 1956 to 1959, was co-investigator of the Demonstration and Study for Improving Patient Care sponsored by the U.S. Public Health Service, and presently is principal investigator for the Demonstration for Planning Health Care Resources. Dr. Knudsen was named "Medical Woman of the Year" in 1957 by the American Medical Women's Association.

* * * *

DR. DALE E. FLENTJE is pathologist and director of clinical laboratories at Immanuel Hospital, Mankato. He has practiced for the past year at Memphis.

* * * *

DR. H. O. MORTENSON of Menahga was elected president of the Heart of Lakes Chapter of the American Academy of General Practice at the annual meeting in Detroit Lakes.

* * * *

DR. M. MELVIN GOLDFINE, a native of Duluth now practicing in Oakland, California, has pledged $15,000 to the Minnesota Medical Foundation to provide an annual $500 medical scholarship. Dr. Goldfine is a graduate of the University of Minnesota Medical School. The gift is in appreciation of a $500 scholarship the foundation gave him in 1955.

* * * *

GRANTS TOTALING $66,770 from the Life Insurance Medical Research Fund have been awarded to University of Minnesota investigators for research in heart disease. Dr. Ralph T. Holman of the Hormel Institute, University of Minnesota, will use a $8,690 grant for study of effects of dietary lipid components on lipid composition in man and animals. Dr. C. Walton Lillehei of the University Medical School received a $29,040 grant for development of new methods for cardiovascular operations. The third grant, also for $29,040, will be used by Dr. Ivan D. Frantz, Jr., for study of regulatory mechanisms in human cholesterol metabolism. Graduate fellowship awards from the fund have been granted to 2 University Medical School students, Ronald E. Blackmore, Biwabik, Minnesota, a second-year fellow, and Harold J. Hofstrand, St. Louis Park, a new fellow.

* * * *

DR. JOHN R. DELAHUNTY, pediatrician, has become a member of the Interstate Clinic staff in Red Wing. He recently completed training in diseases of infants and children at the Milwaukee Children's Hospital. Dr. Delahunty served in the U.S. Air Force in the ear, nose, and throat department at Andrews Air Force Base Hospital, Washington, D. C., after training in the specialty at the G. F. Geisinger Memorial Hospital and Foss Clinic, Danville, Pennsylvania.

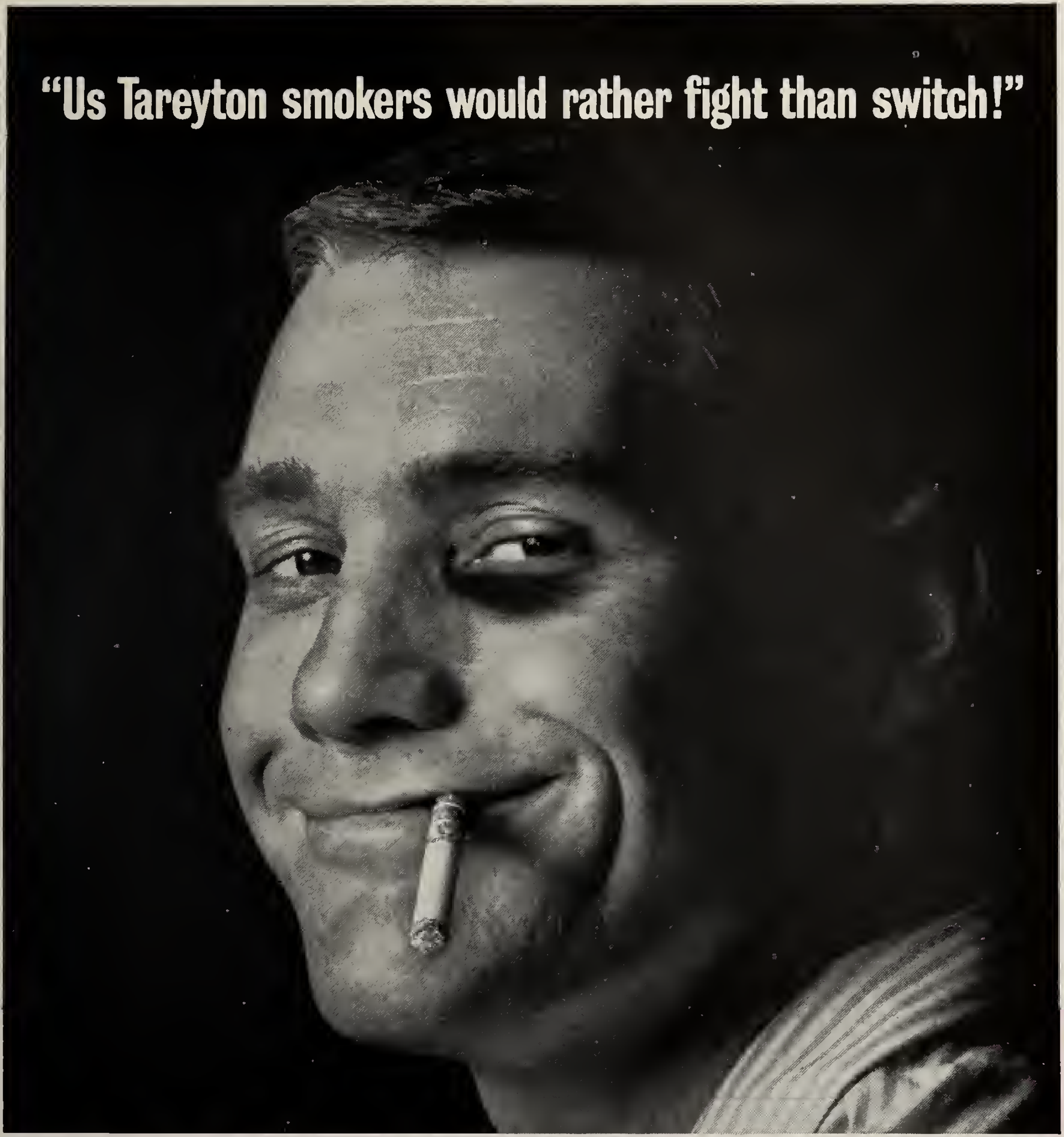
* * * *

DR. MAYNARD M. COHEN, professor of neurology at the University of Minnesota, has joined the University of Illinois College of Medicine faculty. He is chairman of the Neurology Department at Presbyterian–St. Luke's Hospital in Chicago. Dr. Cohen was director of the Center for Cerebrovascular Research at the University of Minnesota.

* * * *

DR. DON AMREN has joined the St. Louis Park Medical Center as a pediatrician. He has completed two years of U.S. Army service and most recently was stationed at Heidelberg, Germany. Dr. Amren is a graduate of Yale University School of Medicine, New Haven, Connecticut. He received three years of specialty training in pediatrics at the University of Minnesota Medical School.

(Continued on page 24A)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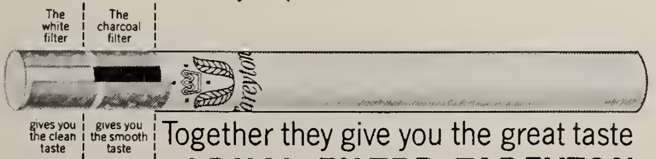

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NEWS BRIEFS

(Continued from page 22A)

DR. GARY BAAB has joined the Itasca Clinic in Park Rapids. Dr. Baab was graduated from the University of Minnesota Medical School in 1960. He interned at San Joaquin County Hospital, Stockton, California, and served two years in the U.S. Public Health Service with rank of Senior Assistant Surgeon. For the past year, he has been Medical Officer in Charge of the Rosebud Indian Hospital, Rosebud, South Dakota. Dr. Baab is a member of the American Academy of General Practice.

* * * *

DR. LOWELL BROWN has joined the Tyler Clinic medical staff. A graduate of the University of Minnesota Medical School, he has been a resident at the Wayne County General Hospital, Eloise, Michigan.

* * * *

DR. JON WEMPNER has joined Drs. John Clarke and Charles Bean at the Lakeview Clinic, Waconia. Dr. Wempner was graduated from the University of Minnesota Medical School and interned at Mountain View General Hospital, Tacoma, Washington. Recently, he was a member of the medical staff at the U.S. Public Health Service Indian Hospital, Gallup, New Mexico.

* * * *

DR. C. O. THOMPSON has purchased the Hendricks Clinic from the founder, Dr. P. E. Hermanson. Dr. Thompson has been associated with the clinic for more than twenty years.

* * * *

DR. C. CARLYLE CLAWSON is affiliated with the Montevideo Clinic. He recently completed a residency in pediatrics at the University of Minnesota Hospital. Dr. Clawson interned at Broadlawns Polk County Hospital, Des Moines. He was graduated from the University of Minnesota Medical School in 1960 and received the Borden Award, which is given to the senior who makes the greatest contribution to research while in medical school.

* * * *

DR. VICTOR E. SCHLOSSBERG, JR., who has practiced in Michigan since August, 1962, has become a member of the Mankato Clinic staff. An internist, he served as clinical instructor in medicine at the State University of Iowa, Iowa City, for a year before he entered private practice.

* * * *

DR. JAMES T. LAIRD, a clinical psychologist, has joined the Northern Pines Mental Health Center in Little Falls. For the past three years, Dr. Laird has been chief clinical psychologist at Willmar State Hospital and has served as consultant to the Lutheran Social Service Center in Willmar. Dr. Laird obtained his doctorate in clinical psychology from the University of Ottawa.

* * * *

DR. LE ROY MUELLER, graduate of the University of Minnesota Medical School, has joined the staff of the Hendricks Clinic. Dr. Mueller finished his internship at Bethesda Hospital, St. Paul, in June.

South Dakota

DR. GERALD HOWE, who has been a member of the Homestake Hospital staff in Lead for the past year, has joined

Dr. J. C. Smiley in practice at Deadwood. Dr. Howe is a graduate of Temple Univerity School of Medicine, Philadelphia. He interned at Los Angeles County General Hospital.

* * * *

DR. JOHN C. SERRAGE of Cincinnati is medical director of the Public Health Service Indian Hospital in Sisseton, succeeding Dr. William Hehcmann, who has entered private practice in Munston, Indiana. Dr. Serrage was graduated from the University of Cincinnati College of Medicine and interned at the E. J. Meyer Memorial Hospital, Buffalo, New York. He was commissioned in the United States Public Health Service in June.

* * * *

DR. MERRILL W. PANGBURN has retired after thirty-three years of practice in Miller. Ill health has forced him to end a career that began with graduation from Rush Medical College, Chicago, in 1923. He moved to Rapid City to become a member of the Rockefeller Board of Health from 1925 to 1927, practiced at Scotland until 1930, then went to Miller. He served on the Miller City Council for eighteen years and is a past president of the Huron District Medical Association.

* * * *

DR. GEORGE A. SKELLY, practitioner at McVille, North Dakota, for the past two years, has joined the Lemmon Clinic. He will practice with Dr. F. C. Totten.

* * * *

DR. ROBERT K. JOHNSON, a recent member of the Public Health Service Alaska Native Hospital staff, Mount Edgecumbe, Alaska, has joined the department of internal medicine at the Rapid City Medical Center. He received his medical degree from the University of Rochester, New York.

* * * *

DR. MAX W. BLACK of Neudorf, Saskatchewan, has announced a move to Canistota. He was house surgeon at Worthing Hospital, Worthing, England, and house physician at City General Hospital, Stoke-on-Trent, England, before moving to Canada.

* * * *

DR. JOHN F. LEEDS has joined the Western Dakota Medical Clinic, Rapid City, after twelve years in Hot Springs. He will be associated with Dr. N. R. Whitney, Jr. Dr. Leeds is a pediatrician who was with the Butler Clinic, Lutheran Hospital, and West River Crippled Children's Hospital in Hot Springs. He was medical director of the children's hospital from 1956 to 1963. He was given the 1962 South Dakota Physician of the Year award for aid to handicapped persons.

* * * *

DR. CARLOS MENDOZA, of the Yankton State Hospital staff for three years, has joined the Central South Dakota Mental Health Center. Dr. Mendoza formerly practiced at the Topeka State Hospital, Topeka, Kansas, and at the Western State Hospital, Fort Supply, Oklahoma.

* * * *

DR. ROBERT E. SHASKEY, a graduate of the University of Kansas School of Medicine, Kansas City, has become a member of the Brookings Clinic staff. Dr. Shaskey served four years at the Naval Air Station, Miramar, San Diego.

(Continued on page 26A)

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NEWS BRIEFS

(Continued from page 25A)

DR. MATTHEW RIVKIN of Brooklyn, New York, is a new staff member at the Public Health Service Indian Hospital, Eagle Butte. He completed internship at Maimonides Hospital in Brooklyn this year. Dr. Rivkin is a graduate of Medical College of Virginia, Richmond.

Deaths . . .

DR. HERBERT W. PETERSON, 62, physician in the Minneapolis area for thirty-seven years, died July 30. Dr. Peterson joined the staffs of St. Andrew and St. Barnabas hospitals in 1926. He was a member of the Hennepin County Medical Society, Minnesota State Medical Association, Minneapolis Surgical Society, American College of Surgeons, and the American Medical Association. Dr. Peterson was graduated from the University of Illinois College of Medicine, Chicago, and interned at Swedish Hospital, Minneapolis.

° ° ° °

DR. PAUL HAGEN, 49, professor of medicine at the University of Minnesota Medical School, was killed September 2 in an automobile collision that also took the lives of Mrs. Hagen and a son, John. The accident occurred near St. Paul, Minnesota. Dr. Hagen was a native of Crookston, Minnesota. He was a graduate of the University of Minnesota Medical School and interned at Peter Bent Brigham Hospital, Boston. In 1948 Dr. Hagen was made head of the Hematology Department, Veterans Administration Hospital, Minneapolis. He became full professor of medicine at the University of Minnesota in 1962 and was also charged with the training of medical students at the Veterans Administration Hospital. He was author of 100 articles on leukemia, blood clotting, and other facets of blood morphology.

° ° ° °

DR. WALTER H. VALENTINE, 88, general practitioner in Tracy for more than sixty years, died September 3 at the Tracy Hospital after a prolonged illness. He was graduated from the University of Minnesota Medical School in 1900 and was the oldest living intern of St. Mary's Hospital, Minneapolis. He was a fellow of the American College of Surgeons, member of the Lyon-Lincoln County Medical Society, Minnesota State Medical Association, and the American Medical Association, and past president of the Southern Minnesota Medical Association. Dr. Valentine was made a 50 Year Club member in 1950 by the Minnesota State Medical Association in recognition of fifty years of medical practice. He was active in public service in Tracy, serving as president of the school board and city health officer. He founded the Tracy Hospital in 1938.

° ° ° °

DR. DOLSON W. PALMER, 62, of Cando, North Dakota, died September 2 in an automobile accident near Drayton. He practiced in Cando for twenty years and for the past eight years was associated with Dr. G. H. Hilts. Dr. Palmer was a 1927 graduate of the University of Michigan Medical School, Ann Arbor. He was a member of the American Medical Association, North Dakota State Medical Association, and American Academy of General Practice.

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Articles and features to be found in the next issue of The Journal-Lancet

The adolescent in our culture is faced with a multitude of demands and pressures, according to Jack V. Wallinga, M.D., writing on "The Adolescent Emotional Quandary" in the January issue of The Journal-Lancet.

These demands and pressures include the internal physiological push for the release of aggressive or sexual tension, peer group expectations to prove himself in order to have the security of belonging, the demands of society to grow up suddenly and within poorly defined limits, and the ambivalent and often confused demands of parents that he be mature and responsible but not necessarily independent nor self-assertive.

Dr. Wallinga writes that the difficulty which the teen-aged youngster experiences in making the transition from childhood to adulthood is certainly not new nor is it characteristic only of our culture.

Conflicting values held by society or by parents tend to attract and serve as vehicles for the tensions of the interpersonal conflicts between parents and adolescents, and the discharge of this friction often then becomes recurrent, replacing other more acceptable methods of expression.

Dr. Wallinga holds that for the adolescent to erupt and rebel is normal, and he may suffer during his period of adolescence. He may need help, but he should be given time and scope to work out his own solution; parents may need help and guidance to be able to bear with him.

The author writes that few situations in life are more difficult to cope with than an adolescent attempting to liberate himself.

Among other articles to appear in January will be:

- **Multiple Anaplastic Change in the Lower Genital Canal,** by J. D. Woodruff, M.D., Baltimore.
- **Cancer Pain,** by John S. Lundy, M.D., Chicago.
- **James Johnston Waring (1883-1962),** by J. Arthur Myers, M.D., Minneapolis.

The Journal-Lancet

SERVING THE MEDICAL PROFESSION OF MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA, AND MONTANA

Special Section

dedicated to the memory of
WALTER L. BIERRING

Giants Have Walked in the Land

GAYLORD W. ANDERSON, M.D.
Minneapolis

THE EDITORS OF THE JOURNAL-LANCET have the honor of dedicating this issue to the memory of Walter L. Bierring, a true giant of American medicine. It was little more than two years ago that the physical Walter Bierring was laid to rest; but long after those of us who knew and worked with him are forgotten, the spiritual Walter Bierring will still live, still contribute to the enrichment of human life, still personify the highest ideals of medicine and public health.

Undoubtedly, someone will ultimately write a biography of Walter Bierring—a biography of leadership, of vision, of youth in old age, of compassion, of spiritual as well as intellectual and political leadership. We will hope that the biographer will not merely narrate the many faceted interests of Walter Bierring but will capture the spirit, the perpetual optimism, the faith in fellowman, and the conviction of the triumph of good over evil, of knowledge over ignorance, of progress over inaction. The mere recitation of his associations with and active participation and leadership in a formidable array of public services would in itself be an inspiring story of how much one man can crowd into a lifetime, for there were few areas of American medicine upon which he failed to leave his imprint. The true picture of this giant of medicine will, however, be found in the portrayal of the character of the man, the extent to which he was able to stimulate and inspire those who were so fortunate as to be associated with him.

Yes, giants have walked in the land, giants whose shadows cast their spell on all on whom they fell, benevolent giants respected and revered by the multitude, giants of intellect and vision, giants of spirit and of faith. To the memory of Walter Bierring, one of the true giants of American medicine and public health, this issue is respectfully and affectionately dedicated.

GAYLORD W. ANDERSON *is professor and director of the School of Public Health, University of Minnesota.*

Walter Lawrence Bierring, M.D.,

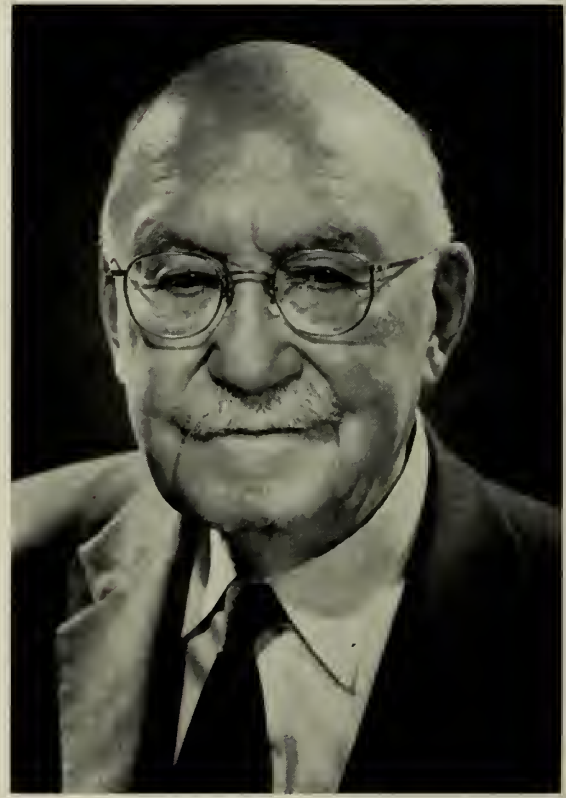
M.A.C.P., Hon. M.R.C.P., Edin.

1868–1961

LEE FOREST HILL, M.D.

Des Moines

The following appreciation of Dr. Bierring by Dr. Hill, a close personal friend and colleague, was written shortly before Dr. Bierring's death, when the editors were planning a special issue of The Journal-Lancet *in his honor. Even though this is a memorial issue, it has seemed desirable to leave Dr. Hill's article just as he wrote it, for Dr. Bierring, though physically departed, is still very much alive in the hearts and memories of his friends.*—Ed.



Walter L Bierring

Dr. Bierring's signature at age 92 years

On July 15, 1960, Dr. Walter Lawrence Bierring of Des Moines, Iowa, celebrated his ninety-second birthday, and his chosen form of celebration consisted of putting in his usual full day's work as director of the Division of Gerontology, Heart, and Chronic Diseases of the Iowa State Department of Health. His medical career began on March 9, 1892, when he received his medical degree from the State University of Iowa. Thus, this remarkable man of medicine, whose friends regard him as of Oslerian stature, has already completed more than sixty-eight years of full-time activity in an unprecedented career of accomplishment in about every field that medicine has to offer. And he's still going strong!

Far from having retired to rest on his past laurels, which he might well have done years ago, he's as energetic and forward looking today as he always has been. Talk to him about medicine and you quickly find that he is far more interested in telling you about some new project

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he is launching than he is in reminiscing about "the good old days." Listen to him discuss a technical medical paper or deliver a speech, whether on a lay or medical subject, and you quickly discover that his cerebral processes are functioning as keenly as those of a far more youthful mind. Without manuscript or notes, he expresses his ideas in a way that is at once the envy and despair of many of his younger colleagues.

EXTENSIVE TRAVELS

Fortunately, his physical stamina is a match for his facile mental processes. An artificial leg made necessary by an amputation because of a malignant tumor when he was a young man has been no handicap to his extensive travels. Take, for instance, the year 1958 when he was 90 years old. The total number of miles he traveled in that year alone was approximately 45,000. Most spectacular of his trips was that to Beirut, Lebanon, in May of that year for the purposes of delivering the opening address at the Middle East Medical Assembly and of installing a chapter of Alpha Omega Alpha, honorary medical society, at the American University of Beirut. Dr. Bierring was president of Alpha Omega Alpha from 1924 to 1960. In that time, he installed over 50 new chapters in American universities in this country and abroad. It is obvious in talking with him that he looks upon his years of service to this altruistic organization with the deepest satisfaction.

His trip to Beirut began on May 4 when he took off alone by airplane to New York City and thence overseas to the Middle East. He arrived in Beirut on May 6. Two nights later rioting against the government began by night bombing. His quarters were in the Alumni Club of the university, and on one of the nights he was there he heard shots in the street below his window. Looking out, he saw a man lying dead in the street. However, the Assembly opened on May 9 as scheduled, and Dr. Bierring made the opening address. The title of his paper was "Billroth, Pasteur, Osler—a Rich Heritage." By May 12, martial law had been ordered for the city, and curfew was imposed from 8:00 P.M. to 5:00 A.M. Chapter Alpha Omega Alpha installation exercises were held from 6:00 to 7:00 P.M. but had to be greatly curtailed because of the requirement that the president and faculty of the university be off the streets by 8:00 P.M. to avoid the risk of being shot. At considerable personal risk, the minister of health, His Excellency Dr. Monkheiber, left a meeting of the cabinet and made his way through the strife-torn city for the special purpose of presenting to Dr. Bierring a medal, Commander of Order of Cedars of Lebanon, the oldest and highest honor awarded by the country. Bombs and rifle shots could be heard at brief intervals during this time.

Early on the morning of May 14, with the special help of the Canadian ambassador, The Honorable M. Elliott, Dr. Bierring was conducted to the Beirut airport through streets patrolled by armored cars. His airplane left at 9:00 A.M. and he was on it. That afternoon the airport was bombed and closed to all traffic. He flew to Istanbul where he spent the next four days recuperating from sleepless nights in Beirut and an over-all nerve-wracking experience. He left Istanbul by plane on May 17 and was home in Des Moines the next afternoon at 4:00 P.M. And this, let us recall, was the exploit of a 90-year-old man—alone!

During the remainder of 1958, he was away on trips nearly as much as he was at home. A few may be mentioned here to show his wide range of interests and to illustrate his surprising energy. In June he was off to San Francisco to attend the annual meeting of the American Medical Association; in September to Chicago for a conference on aging; in October to Philadelphia for a meeting of the directors of Alpha Omega Alpha; to Iowa City where he presented a paper on "Retirement" before the Institute of Gerontology; to St. Louis for the annual meeting of the American Public Health Association; in November to Halifax, Nova Scotia, where he installed a chapter of Alpha Omega Alpha at Dalhousie University; to Philadelphia for the annual meeting of the Gerontological Society; to Kansas City for a 7-state conference on cancer; to Canada again to install a chapter of Alpha Omega Alpha at the University of Alberta; and in the latter part of November and early December to Minneapolis for the clinical session of the American Medical Association, meeting of the House of Delegates, and an executive committee meeting of the Federation of State Medical Boards of the United States. Dr. Bierring's membership in a wide variety of organizations and on committees and his popularity as a speaker have always necessitated extensive travel, but the remarkable thing is that there has been no letup even in this the ninety-second year of his life.

BACKGROUND AND TRAINING

The question may well be asked now, of what is this man made that he is so indestructible in both mind and body? And one does not have to look far to find at least a partial answer. This is his Danish ancestry, for the Danes are a people renowned for their physical stamina. The Bering Sea bears the name of one of his ancestors, Vitus Jonassen Bering, who discovered and explored this arctic body of water. His parents, Jeppe and Elizabeth (Jessen) Bjerring, came to this country in 1866 shortly after their marriage in Denmark. The spelling of the name Bjerring was changed to Bierring after the family arrived in Iowa. Because his father had spent some sixteen years roaming the seas (three years in the United States Navy, 1861 to 1864), his mother wanted to settle inland as far away from the sea as possible. Consequently, they came to Davenport, Iowa, a town of preponderantly German-speaking people. Here Dr. Bierring was born July 15, 1868, and here he spent his childhood years.

His parents insisted that young Walter learn German as well as Danish and English. Their farsightedness proved its worth later when he went to Europe to supplement his medical training. His early education was obtained in the Davenport public and high schools. Like so many boys today, he was a newspaper carrier from the ages of 11 to 14. Later, he attended the Davenport Business College where he acquired the beautiful handwriting he still retains and which is illustrated in his signature below his photograph.

In the fall of 1889, when he was 21 years old, young Bierring enrolled in the school of medicine at the State University of Iowa. By present standards, the educational requirements of that era for a medical degree seem a bit skimpy. The required course was three years of five-and-a-half months each year. The long vacation was considered necessary to permit the student to earn money to finance his next year of education. For his third year of training, Dr. Bierring served as an intern from March to October of 1891 at Mercy Hospital, Davenport, and from October to March 1891 through 1892 at Iowa City. But, as we shall see, his undergraduate medical training was richly supplemented by his study abroad.

Something of the brilliant career which lay ahead of him was forecast while he was yet a medical student. In his junior and senior years, he was an assistant in the department of anatomy, and in his senior year he was asked by the dean to undertake a two-year postgraduate tour of European medical centers and, upon his return, to become professor of pathology and bacteriology at the State University of Iowa. He received his degree in March 1892, and on March 22 he was on his way to Europe. One month later he was notified by the dean that his appointment had been approved by the board of regents to become effective on October 1, 1893.

In Europe Dr. Bierring met and studied under many of the famous men of that day. To most of us, their names are familiar only as eponyms for something in medicine such as an anatomical landmark, a physical sign, or a disease syndrome. But to him, the names of these early pioneers in Europe, and in America as well, who have long since departed this life are remembered not in connection with the discovery which merited the eponym but rather as living people whom he saw and heard and with whom he conversed.

It can be said with certainty that no other physician lives today who was a personal friend of so many great names of the past. In Vienna were Nothnagel and Kraus in internal medicine, Billroth and von Eiselberg in surgery, Krafft-Ebing in neurology and psychiatry, Kaposi in dermatology, Paltauf and Gruber in pathology and bacteriology, Politzer in otology, and Chiari in rhinolaryngology. In Heidelberg were Virchow, Arnold, and Ernst. At Pasteur Institute in Paris were Pasteur, Roux, Metchnikoff, and Calmette. Later, he came to know Osler, Widal, Welch, Sir Clifford Albutt (Regius Professor at Cambridge), Sir Humphrey Rolleston of the Royal College of Physicians, Sir Holburt Waring of the Royal College of Surgeons, Sir Norman Walker (a dermatologist in Edinburgh), and Sir Donald MacAlester, chancellor of the University of Glasgow and president of the General Medical Council of Great Britain. These are but some of the names Dr. Bierring recalls readily from that past era. There are many others.

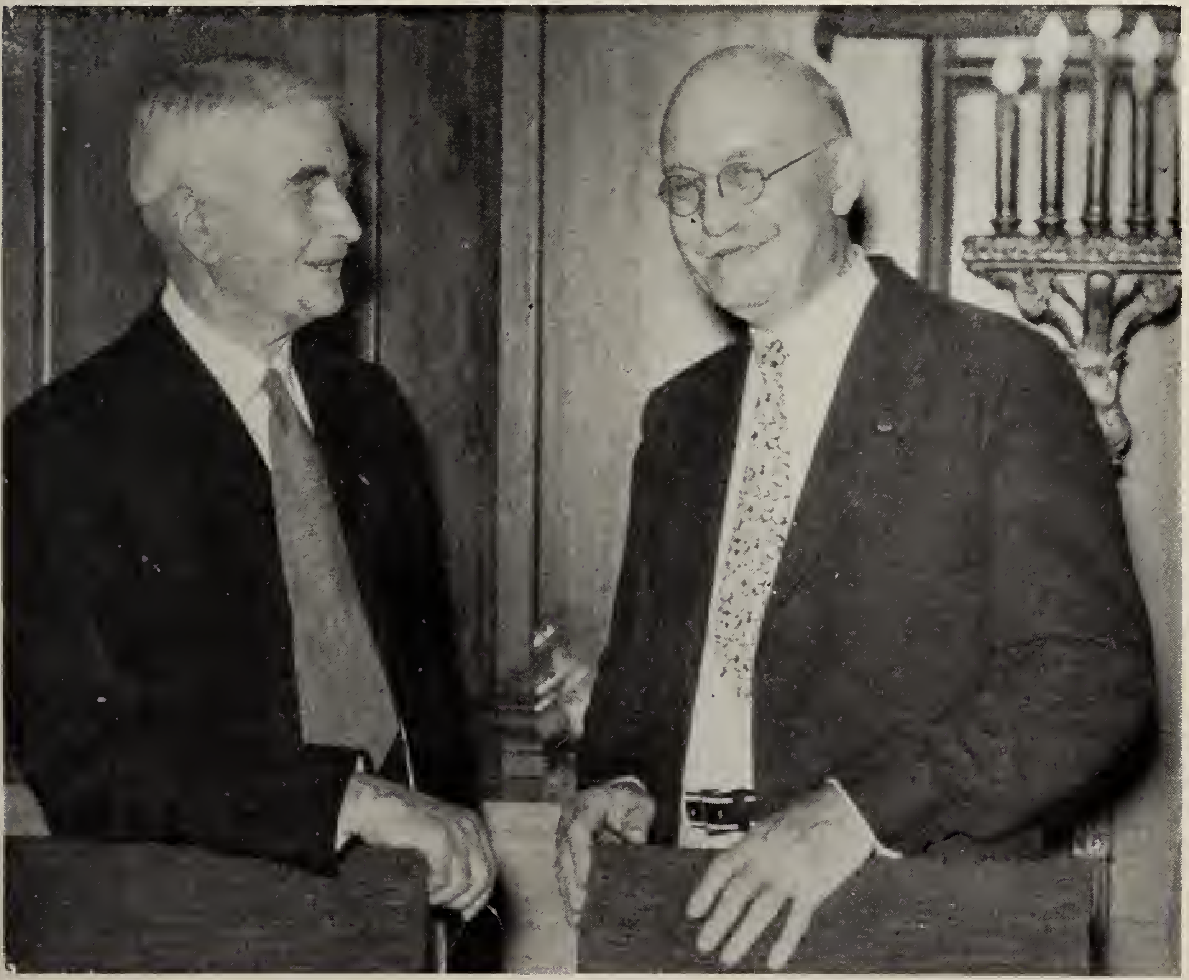
He first went to the University of Heidelberg where he spent a semester studying bacteriology under Prof. Ernst, a former assistant to Koch, discoverer of the tubercle bacillus. He also attended lectures and autopsies conducted by Prof. Arnold, a pathologist. For the first time, he saw autopsies of persons dead from Asiatic cholera with the characteristic "rice water" intestinal contents. He was a witness of the last European epidemic of cholera in 1892 at the nearby city of Hamburg, and this gave him an added interest in this disease.

He then went to Vienna, which at that time was the mecca of medical education, especially in pathology. Most famous was the Allgemeine Krankenhaus, a public hospital of 3,000 beds with some 4,000 autopsies per year. It was here that he had the pleasure of meeting Prof. Theodor Billroth, the eminent surgeon and pathologist, and of attending his ward walks and discussions. He regards it as a great privilege that it was here also that he had a course in bacteriology under Prof. Gruber, a former assistant of Prof. Robert Koch of Berlin. Dr. Bierring states that "the last 2 decades of the nineteenth century was a period when bacteriology was becoming an integral part of medical and clinical investigation. Two schools of this new science were shaping the current thought in all fields of medicine, that of Louis Pasteur in Paris and Robert Koch in Berlin."

INFLUENCE OF PASTEUR

After a year and a half abroad, he returned to Iowa City to begin his professorship of pathology and bacteriology. It is said that his were the first formal courses to be given in these subjects at the State University of Iowa, and he set up laboratories for both disciplines. At the close of the school year in April 1894, he again traveled to Europe, this time to the Pasteur Institute in Paris where he had the rare privilege of studying for six months under the great Louis Pasteur and his associates, Metchnikoff, Roux, Calmette, and Borrell. Although he made subsequent trips to Europe in 1896 and again in 1901, studying at such medical centers as London, Leipzig, Munich, Vienna, and Paris, his experience at the Pasteur Institute still remains fresh in his memory as the most thrilling of his postgraduate training career.

Early in the year 1894, Dr. Emile Roux, director of the institute, began for the first time the production of diphtheria antitoxin on a large scale by immunizing horses. The antidiphtheria serum was used in the treatment of 300 cases of diphtheria in the nearby Children's Hospital with the result that the prevailing fatality rate was reduced 51 per cent in the treated cases. Dr. Bierring was permitted to observe and learn the preparation and therapeutic use of the diphtheria antitoxin so that on his return to Iowa he was able to prepare a supply for distribution to physicians during the early months of 1895. Each cu-



William J. Mayo and Walter L. Bierring, August 8, 1934 bic centimeter represented 2,000 units of antitoxin. This was the first diphtheria antitoxin prepared west of New York City.

During the next few years, he pioneered in establishing many other services designed to improve public health in Iowa. Among these was the establishment of a diagnostic bacteriological laboratory in connection with the State Board of Health. Later, this was expanded to the state hygienic laboratory of the Iowa State Department of Health and has functioned uninterruptedly and with increasing effectiveness throughout the intervening years to the present.

Dr. Bierring served as professor of pathology and bacteriology for ten years. In 1903 he was appointed to the chair of the Theory and Practice of Medicine, a post he held for seven years. In 1910 he left Iowa City and came to Des Moines where he was professor and head of the Department of Internal Medicine in Drake University Medical School. Three years later, the Drake Medical School was merged with the College of Medicine, State University of Iowa, and Dr. Bierring entered private practice as a consultant in internal medicine in Des Moines. Thus, the first twenty years of his professional life were devoted to academic medicine.

The next twenty years, from 1913 to 1933, were spent in private practice as a consultant. In 1933, at the age of 65, when most men are beginning to look forward to the relaxation of retirement, Dr. Bierring accepted an appointment as commissioner of the Iowa State Department of Health, a post he held also for twenty years. Now he is on his fourth twenty-year period as director of the Iowa State Health Department Division of Gerontology, Heart, and Chronic Diseases, and it would be hard to get a bet among his many friends and colleagues that he won't make it!

EXTRACURRICULAR INTERESTS

Dr. Bierring's extracurricular interests have been many and varied. His lifelong devotion to Alpha Omega Alpha Honor Medical Society has already been mentioned. Equally devoted has been his work with state and national examining boards. Thus, he has been secretary-treasurer of the Federation of State Boards of the United States and editor of its publication, *The Federation Bulletin*, since its origin in 1915. He was one of the organizers of the National Board of Medical Examiners in 1915 and 1916 and continued as a member for the next thirty years. He served as president from 1928 to 1930 and was a member of the executive committee most of the remainder of the time. His interest in medical education, licensure, and techniques of examination led to an appointment in 1919 by Newton D. Baker, Secretary of War, to a commission to study similar matters in Scotland, England, and France with a view to the establishment of reciprocal relations. In the following year, a like commission from the foreign countries was invited by the National Board of Medical Examiners to visit this country. A tour of the major medical centers of America was arranged, and, at its close, the commission witnessed a national board examination.

By this time, Dr. Bierring's accomplishments had become known nationally and internationally, and in 1922 the Royal College of Physicians of Edinburgh made him an honorary member of their society in recognition of his distinguished services. From 1925 to 1932, he was a member of another important national commission of which Dr. A. Lawrence Lowell of Harvard University was chairman and Dr. Willard C. Rappleye of Columbia University was medical director. The commission carried out an extensive study of many phases of medical education both here and abroad and, at the conclusion of its work, published a voluminous report which was regarded as authoritative in its field.

Dr. Bierring pioneered in the establishment and development of the Advisory Board of Medical Specialties and the American boards as he had with the state boards and the National Board of Medical Examiners. The Board of Internal Medicine was established in 1936, and he served as its first chairman from 1936 to 1939. He had the honor of being issued Certificate No. 1. In 1947 the American Board of Preventive Medicine and Public Health, Inc., was organized, and Dr. Bierring was chairman for nine consecutive years. Certificate No. 1 from this board was also issued to him. In 1950 the name of this board was changed to American Board of Preventive Medicine, and a Sub-Board of Public Health was organized. Largely due to his efforts, the Sub-Board of Aviation Medicine was established in 1953 and Occupational Medicine as a sub-board came into being two years later.

The effect of the boards upon specialization in American medicine has been a salutary one, indeed. Prior to the boards, all that was required to become known as a specialist was to announce one's special interest regardless of the amount of training. The contribution of the boards was to specify training requirements in approved centers and to offer examination to those who completed the requirements. Successful candidates were issued certificates, and their names were listed in the American Directory of Specialists.

Thus, the public now had the assurance that a licentiate of a specialty board was indeed a specialist in fact as well as in name. Dr. Bierring's role in this important development was a major one.

POLITICS IN MEDICINE

But there remains another area of accomplishment to be related in the professional career of this productive man. This concerns the field of what might be described as politics in medicine. He became a member of the American Medical Association in 1895 and was a member of its House of Delegates for some eighteen years. His worth to organized medicine was recognized in 1933 when he was elected president of the American Medical Association, the highest office American medicine has in its power to bestow. Some years later, in 1954, he was elected by the board of regents to be Master, American College of Physicians, and in 1956 he was awarded the American Medical Association's distinguished service award. Nor did he neglect his native state, for he served as president of the Johnson County Medical Society in 1902, the Iowa State Medical Society in 1908, and of Polk County Medical Society in 1911. Throughout the years at the national, state, and local level, his wise counsel, enthusiasm, and charm of manner have made him a most sought after and valued member of a multiplicity of medical organizations. Altogether, he holds membership in some 30 such organizations.

In his busy life, he has found time to write many scientific articles for publication in medical journals. A selected "Bierring Bibliography" published in the Walter L. Bierring Festschrift issue of the *Iowa State Medical Journal* for August 1957 lists 194 separate titles. He is also the author of several books. No record is available of the innumerable lectures and talks he has given in all parts of this country and abroad. Outstanding among these was the Alphonse M. Schwitalla Lecture on "Medical Echoes" given at St. Louis University School of Medicine in St. Louis, Missouri, on March 24 and published in Alpha Omega Alpha's *Pharos* in April of 1950.

Dr. Bierring married Miss Sadie Byrnes in Davenport on April 14, 1896. His young bride accompanied him on his third trip to Europe in 1896. Two daughters were born to the couple, and Dr. Bierring has a granddaughter and twin great-grandchildren, a boy and a girl. Mrs. Bierring died in 1943.

Thus briefly is outlined the profile of one of America's great figures in medicine. Endowed with rare physical and mental stamina, he has made full use of his talents in a long life of exceptional accomplishments. His professional career has embraced almost the entire span of the great advances in medicine, and he has been an active participant in the initiation and development of many of these advances.

His career has been unique in many ways. His phenomenal nearly three score and ten years as a physician have been about equally divided among academic medicine, private practice, and public health. Undoubtedly, he is the only physician who was ever appointed to be professor and chairman of a department while he was still a medical student. And it seems altogether unlikely that any other physician is living today, at least in America, who was a student and friend of such notable figures of the past as Pasteur, Billroth, Nothnagel, Ernst, Virchow, and Metchnikoff. He has been president of the American Medical Association and president or chairman of numerous other national, state, and local organizations, and he has been honored by foreign countries. Truly, his has been a life of accomplishment and of distinguished service to his profession. Above all, his warmth of personality, charm of manner, ready interest in the problems of others, superior intellect, and solidarity of character have won for him a host of friends in many lands throughout his career. May the name of Bierring long endure in the history of American medicine!

Walter L. Bierring, M.D.

An Appreciation

WILLIAM B. BEAN, M.D.
Iowa City

The following appreciation was presented by Dr. Bean as part of the Walter L. Bierring Memorial program at the Joint Meeting of the Middle States Branch, American Public Health Association and the Minnesota Public Health Association in Minneapolis in June 1962. The article is reprinted with permission from GERIATRICS 16:355-359.—Ed.

IN A SOCIETY preoccupied by the problems of an aging population, it is fitting to pay tribute to one who has managed to grow old gracefully, keeping his youthful enthusiasm and productivity. The tragedy of aging is not so much the decline in the functions of youth as the failure in youth to muster and employ the available talents for contributions which are valuable to society and rewarding to the individual when he grows old.

Dr. Walter L. Bierring personifies the traits, attributes, and capacities which enable a person to remain creative; he is at once a stimulus and a delight to his junior colleagues. In a professional career that spans seven decades, Dr. Bierring has witnessed most of the truly great evolutions of modern medicine and has played a large role in the great growth of the field of public health in modern society.

Dr. Bierring has been fortunate in possessing that rare combination of natural advantages and the habits and attitudes of life calculated to employ them well. He is a happy example of a sound mind and a sound body, neither of which was allowed to ascend over the other. Thus, he has escaped the bane of our present society in which far too few people mature but instead join the army of aging children whose idle hands and often empty heads exemplify the casual apathy of undeveloped talents.

CONTINUING PRODUCTIVITY

Dr. Bierring's life exemplifies the rare phenomenon of productivity continuing with advancing years. Thus, he has been able to combine the enterprising innovations and inquiries of youth with the tempering experience and wisdom of age. He has escaped the danger epitomized by La Rochefoucauld when he said that "Old men are fond of giving good advice in order to console themselves for being no longer able to serve as bad examples."

During the past twelve years, it has been my great pleasure to have enjoyed a close and warm association with Dr. Bierring, a Nestor of American medicine, some of whose accomplishments I shall sketch for you. As a very active nonagenarian, he continues to play an important part at the forefront of activities in public health and in medical education. He embodies the high traditions of medical excellence exemplified in Alpha Omega Alpha, the medical honorary society over which he has presided for decades and whose journal, *Pharos,* he has long edited.

Dr. Bierring has received numerous awards and many richly deserved honors. As a few examples, he is an honorary fellow of the Royal Society of Medicine of Great Britain, honorary member of the Canadian Public Health Association, recipient of the McCormick Award, holder of the first specialty certificate of the Board of Internal Medicine and the Board of Preventive Medicine, recipient of the American Medical Association's distinguished service award, past-president of the American Medical Association in 1934 and 1935, honorary member of the Royal College of Physicians of Edinburgh, honorary fellow of the Royal Sanitary Institute of Great Britain, and, most recently, recipient of the *Modern Medicine* award for distinguished

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achievement. For many years, he was Iowa State Commissioner of Public Health, and he currently is head of the Iowa State Health Department, Division of Gerontology, Heart, and Chronic Disease.

Walter Lawrence Bierring was born in Davenport, Iowa, on July 15, 1868, of parents who had recently come to this country from Denmark. For sixteen years his father, Jeppe, saw the world as a seafarer and warrior. He was captured and kept in prison in the Crimean War and served for three years in the United States Navy during the American Civil War. When he returned home, he married Elizabeth Jessen, who persuaded him not only to go to a new country but to go as far inland as possible, away from all nautical temptations. So it was that two years after Jeppe and Elizabeth Bierring had settled among the preponderantly German-speaking people at Davenport, Iowa, Walter was born. As he grew up, he learned German and Danish as well as English. This linguistic background stood him in good stead during his postgraduate training in European universities.

Few people have any clear idea of why they study medicine. Many can point to some dramatic incident. A railroad accident in which young Bierring injured his foot brought him into contact with 2 fine physicians: Dr. Washington F. Peck, who commuted from Davenport to serve as dean and professor of surgery at the young medical school in Iowa City, and Dr. William D. Middleton, who linked the chair of physiology with that of the principles of medicine. It was the picture of these distinguished early Iowa physicians that influenced Dr. Bierring to undertake the study of medicine.

YEARS OF STUDY

Dr. Bierring enrolled at the medical college of the State University of Iowa. There he found a medical course of three years with a graded curriculum, rare for those days. During his second year in medical school, he was privileged to learn the challenging fundamentals of bacteriology from Dr. Thomas H. MacBride, who was professor of botany at the university and who was the first there to prepare pure cultures of bacteria and yeasts for his studies and teaching. As a senior medical student, Dr. Bierring was a student intern in Mercy Hospital and made the necessary preparations for medical and surgical clinics. He was also a student assistant in anatomy. By the end of his junior year, arrangements were made for him to spend two years in postgraduate study in European medical schools and research institutes. This was to prepare him to take over the university's department of pathology and bacteriology, to which he was appointed by the board of regents a few weeks after he received his medical degree in March 1892.

Dr. Bierring studied first at Heidelberg University, Germany, where Prof. Robert Koch's assistant, Prof. Ernst, was teaching the first course in bacteriology. Theodor Billroth, a master surgeon at Vienna, was another teacher. Dr. Bierring's facility with the German language gave him an advantage over his American colleagues in leading continental medical centers, such as the Allgemeine Krankenhaus, a vast public teaching hospital with 3,000 beds where almost twice that many autopsies were done every year.

In 1894 Dr. Bierring went to the Pasteur Institute, Paris, studying under Pasteur, Metchnikoff, and Roux. Here he learned such details as how to immunize horses and prepare diphtheria antitoxin. The next year, when he returned to Iowa, he went into production, making the first diphtheria antitoxin available west of New York City. There were several subsequent European visits and six-month courses of study in London, Paris, Berlin, Prague, and Vienna.

ACHIEVEMENTS

The next phase of Dr. Bierring's life prepared him for the broad accomplishments he was to achieve in the field of national and international medicine and medical education. In pathology he introduced and expounded the staining techniques and newer knowledge of microscopy which he had gained in his European postgraduate studies. The microscope became a standard item of student equipment. In bacteriology he not only introduced antitoxin into practice but employed the newer diagnostic cultural methods which he had learned firsthand in the Pasteur Institute.

The early work that Dr. Bierring did while in charge of the bacteriology laboratory at the University of Iowa in combating diphtheria and typhoid fever prepared the way for the later establishment of the hygienic laboratory of the State Board of Health. This laboratory made diagnostic tests for an increasing number of diseases available to doctors throughout the state. The papers he published at that time reveal his interest in gross pathology, postmortem work, diagnostic methods for staining bacteria—especially the tubercle bacillus, early diagnosis of cancer, serum therapy, and various disorders of the alimentary canal.

Early in Dr. Bierring's career at Iowa City, near tragedy struck. A lump was discovered in his left leg, with enlargement of inguinal lymph nodes. When the diagnosis of epithelioma was made, the leg was amputated. This blow was merely a challenge, and an artificial leg has never curbed Dr. Bierring's vast propensity for getting about and getting on, seeing firsthand, wherever they may be, the people and places which interest him.

After eleven years in pathology and bacteriology, Dr. Bierring was made head of the university's department of the practice of medicine, where he gained clinical experience, building wisely upon the sound basis of his knowledge of pathology and bacteriology. His many papers of this period deal with clinical problems of therapy and diagnosis. A sound recognition of the usefulness and limitations of the laboratory in medicine was apparent. When he became president of the Iowa State Medical Society at the age of 40, he had a clear visualization of the importance of lively and well-supported local and state medical societies in the structure of medicine. During this time, his interest in chronic disease, in epidemics of poliomyelitis, and in a broad view of preventive medicine was finding expression in forthright papers much in advance of the general attitudes of the day. His career at the State University of Iowa ended in 1910 when he left for Des Moines where he has lived since. He was head of the department of medicine at Drake University until it closed its doors in 1913.

For the next two decades, Dr. Bierring specialized in internal medicine and met increasing demands for consultation. He was a pioneer in leading the battle against widespread ignorance and inertia in matters of proper sewage disposal, pure water supply, and so forth, on which depended the welfare of an increasingly urban population. The experience and day-by-day details of practical bacteriology and pathology had impressed on him continually the importance of hygienic measures to prevent the spread of infection and disease. He also took an active part in formulating and getting general acceptance of rules of licensure and systems of examination for testing the capacity of the physician to practice general medicine or a medical specialty.

In order to put some order into the chaotic licensure requirements of the 48 states, Dr. Bierring developed and helped set in motion the National Board of Medical Examiners, founded in 1915. He has edited the bulletin of this organization continuously since its inception forty-five years ago. Since the power to examine includes the power to determine who shall not practice, this board and others which followed have had profound influence on the methods of instruction in medical schools. Dr. Bierring found that a comprehensive test, including practical bedside examination of patients, encouraged medical schools to include training along these lines. This type of instruction has been one of the elements that has assisted in expanding clinical teaching on the wards.

Shortly after World War I, Secretary of War Newton D. Baker appointed a commission consisting of Dr. Bierring, Col. Louis A. LaGarde, and Col. Victor C. Vaughan to study the system of examinations for medical qualification in Europe with the hope that, by introducing reciprocity, some order might be brought into the chaotic licensure problem of the several and independent states.

HELPS ESTABLISH BOARD

The perplexing questions of standardization and establishment of medical specialties had grown great before any step was taken to govern the authorization for specialty practice and the designation of specialists. This was an epiphenomenon of the wide and growing development of specialization, a spontaneous growth which has paralleled the growing complexity of medicine. Many persons believed that some system was necessary to enable the public to identify an adequately trained specialist and, indeed, to permit recognition among the specialists themselves.

Under the auspices of the American Medical Association and the American College of Physicians, the American Board of Internal Medicine was organized in 1936. Dr. Bierring became the holder of Certificate No. 1, and he holds the same certificate number from the American Board of Preventive Medicine. One somewhat unexpected result of the practical powers of specialty boards has been the rigid standardization of training. While it no doubt elevates the level of work done by the poorer candidates, originality and variation in training and background have suffered, though a more liberal trend is apparent now.

Dr. Bierring also has been very active in developing the influence and expanding the chapters of the medical honorary society, Alpha Omega Alpha. Though Dr. Root was a founder, Dr. Bierring has been at the helm for so long that he really is its father. He has devoted untold time and energy to promoting the program of the society during the thirty-six years that he has been its president and the editor of its journal, *Pharos*. With the establishment of chapters in Canada and in Beirut, Alpha Omega Alpha has achieved international status under his guidance, and it has encouraged standards of excellence in training for the practice of medicine. Dr. Bierring personally has installed the officers and bestowed the charters on more than 50 new chapters.

FURTHER CONTRIBUTIONS

A word should be said about Dr. Bierring's contributions in the field of gerontology. His creative work in the Iowa State Department of Health and in national organizations shows that his philosophy runs counter to the observations from Scripture—"Your old men shall dream dreams and your young men shall see visions" (Joel 2:28). Dr. Bierring's vision has been keen and youthful. His contributions to the development of the specialty of geriatrics antedated considerably the present vogue which aging naturally has in a population wherein the average age has been steadily and inexorably advancing. He has paid no attention to the perennial conflict between generations and has wasted no time, as many older people do, in frowning on the activities of the young. Rather, he has furthered our understanding of how the great potential for effective enterprise and, indeed, creative developments can be made not just the prerogative of youth but a challenge for those whose years, but not whose capacities, put them in the class of old men.

Dr. Peyton Rous once told me of an event which epitomizes the character and qualities of Dr. Bierring. It occurred at the time when the cornerstone of the university hospitals building was laid in Iowa City in the middle 1920s. The great ceremonial occasion was attended by representatives from many universities and institutions. As Dr. Bierring and Dr. Rous were being driven to the affair to hear the great speakers, they came upon the scene of an accident. A runaway horse had overturned a wagon, and a young farmer lay injured. Dr. Bierring immediately got out and attended to the medical needs of the injured man, while the procession moved on without him. Only when the injured man was cared for did Dr. Bierring, unruffled and unaware of the impression he had made, move on to the pavilion of the elect where the speeches were in progress.

Such, then, is Walter L. Bierring, to whom I bring this tribute and homage as a token of my affection and regard.

The Iowa State Medical Society is planning a Bierring Memorial Room which will take the form of a remodeled and refurnished conference room on the third floor of the State Office Building in the suite of the State Department of Health in Des Moines. The project will involve paneling all the walls in walnut, draping the windows from ceiling to floor, and carpeting the floor. A memorial plaque in walnut about six feet square will be placed on the north wall and an anteroom constructed on the south wall. It is estimated that the work will cost about $20,000. The funds are being sought from members of professional associations and friends and admirers of Dr. Bierring.

Interested persons may send checks payable to the

Bierring Memorial Room Fund

and mail to:

Donald L. Taylor, *Treasurer,* **c/o Iowa Medical Society**
529 36th Street, Des Moines, Iowa 50312

Walter L. Bierring, M.D., and The American Board of Internal Medicine

WILLIAM S. MIDDLETON, M.D.
Oklahoma City

THE NAME and works of Walter Lawrence Bierring are so inextricably interwoven with the conception and establishment of the American Board of Internal Medicine as to render a comprehension of his role in this significant development essential to a clear grasp of its evolution. Having enjoyed unusual opportunities for foreign study upon graduation from the State University of Iowa, he was zealous in seeking similar outlets for the oncoming generations of American physicians.

HISTORY OF NEED

Two circumstances joined to bring the situation of graduate medical education to a critical pass in this country in the post-World War I period. In the first place, the traditional fountainheads of continental Europe and Great Britain had been completely disorganized and disrupted by the late conflict. In fact, before World War I, serious doubts had arisen relative to the quality of graduate and postgraduate medical education abroad. The absence of firm objectives and the range of exposures, from superficial to profound, left much to be desired from an objectively evaluative standpoint. Compounding this crisis, unfortunately the centers of graduate medical education in the United States were in no position to take up the slack. The confusion and disorientation of this situation were obvious circumstances that made critical supervision of the qualifications of specialists imperative in the public interest.

The movement for the regularization of the recognition of specialists in medicine was initiated by the formation of the American Board for Ophthalmic Examination in 1916. The assumption of such prerogatives gave to this body a measure of control of the graduate training in this specialty by fixing the qualifications for admission to its examination. By 1934 only 3 other specialties, otolaryngology, obstetrics and gynecology, and dermatology had followed the example of ophthalmology by establishing similar qualifying boards. In each instance, the responsible group took the firm position that their function was to judge the training and capacity of the candidate to practice the stated specialty. Licensure and legal authority to pursue the practice of that specialty were beside their purview. From the outset, these groups individually avoided any suggestion of the improvement of the financial status or preferment of hospital appointment on the basis of certification.

When the American College of Physicians was invited by the Council on Medical Education and Hospitals of the American Medical Association to participate in a conference to study the problem of specialized medicine, its president, Dr. George Morris Piersol, appointed Dr. Bierring as its representative. The conference convened in Milwaukee, June 11, 1933. In attendance were delegates from the existing specialty boards (4), the American College of Physicians, the American College of Surgeons, the Association of American Medical Colleges, the National Board of Medical Examiners, and the Federation of State Medical Examiners. Parenthetically, by reason of his ubiquitous activities, Dr. Bierring might well have represented 3 of the convened groups!

With the guiding hand of the council, the participating groups joined forces to form the Advisory Board for the Medical Specialties, February 11, 1934. Although this body has never

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possessed police power, with the support of the Council on Medical Education and Hospitals it has continued to exercise an extremely important control on the formation and organization of specialty boards over the intervening years.

Dr. Bierring's appointment to this important assignment was eminently fitting. Aside from his wide and interlocking interests, his professional and political position in medicine made him an invaluable representative and reporter for the college. At the meeting of the board of regents of the college on December 3, 1933, he gave a detailed account of the proceedings of the Milwaukee sessions. In conclusion, Dr. Bierring recommended that the American College of Physicians follow the traditional European pattern of independent examinations for admission to its fellowship rather than participating in the creation and operation of a certifying body in internal medicine.

SPECIALIZATION STUDY

A full and lively discussion followed Dr. Bierring's recommendation. Although the tenor of the meeting apparently favored the independent action of the college in this matter, reason prevailed and the final decision was deferred to permit a more comprehensive study. Dr. Piersol was authorized to appoint a committee on specialization to investigate the matter thoroughly and to bring its recommendations to the next meeting of the board of regents. On April 17, 1934, the chairman, Dr. James Alexander Miller, advised that the committee deemed the establishment of such a board neither feasible nor desirable at the time. Moreover, they recommended the development of a studied plan for formal independent examinations by the college to render the admission to associateship and fellowship a more rigid and selective procedure. The committee expressed its appreciation of Dr. Bierring's advice in their deliberations.

On May 23, 1934, President Jonathan C. Meakins appointed the committee on examinations to implement the recommendations. In the report to the regents on December 16, 1934, the chairman, Dr. O. H. Perry Pepper, stated that the group favored an oral and written examination for all candidates who were elected after April 1935, for advancement from associateship to fellowship. In the succeeding discussion of the proposal, Dr. Bierring cited the sustained success of the written and practical examinations of the National Board of Medical Examiners over a period of eighteen years. While deferment of action on the report was voted, its importance was recognized in the appointment of 2 added members to the committee, one of whom was Dr. Bierring. The committee was instructed to make its final report to the board of regents in April of 1935.

The sentiment in favor of a co-operative effort between the American College of Physicians and the American Medical Association (section on the practice of medicine), such as had been enjoyed by other certifying bodies, had grown apace. The quiet advocacy of this relationship by Dr. Bierring was bearing fruit. Dr. Meakins was likewise a strong champion of constructive action in this area. When Dr. Pepper, reporting for the committee on examinations on April 30, 1935, recommended to the board of regents the establishment of an "American Board for the Certification of Internists" in conjunction with the section on the practice of medicine of the American Medical Association, the regents gave unanimous approval. Moreover, they voted financial support of the new venture until the proposed board should become self-supporting. A limitation of $10,000 was set for these loans for the first year.

BOARD IS APPROVED

With the manifest interest of the contracting parties, the application for recognition of the new board by the Advisory Board for Medical Specialties was assured a favorable reception. Representing the joint committee of the section on the practice of medicine and the American College of Physicians, Drs. Bierring, Irons, and Middleton met with the executive committee of the advisory board in February 16, 1936. After minor changes in the articles of incorporation and by-laws, the executive committee accepted the application of the American Board of Internal Medicine. The following day, February 17, 1936, the Council on Medical Education and Hospitals confirmed this action. Upon the advice of the advisory board and the council that the articles of incorporation be filed in an appropriate court, this formality was executed at Des Moines, Iowa. Dr. Bierring, as a member of the joint committee, was one of three witnesses. The formal approval of the American Board of Internal Medicine was voted by the entire Advisory Board for Medical Specialties May 10, 1936, and the Council on Medical Education and Hospitals of the American Medical Association at the annual session, May 12, 1936.

In the preparation of the proposal of the American Board of Internal Medicine to the Advisory Board for Medical Specialties, President James Alexander Miller named Drs. Barr, Meakins, Middleton, Pepper, and Richards to represent the American College of Physicians and Dr. William J. Kerr, chairman of the section on the practice of medicine, offered the names of Drs. Bierring, Fitz, Irons, and Musser for the section. These members therefore constituted the original American Board of Internal Medicine. The first meeting of the board convened in Chicago, June 14 and 15, 1936. In the organizational session, Dr. Bierring was named its first chairman. His vision and statesmanship had overcome many obstacles to the initiation of the movement, and his selection was a recognition of his personal efforts as well as his qualifications in medical leadership. Dr. Meakins was elected vice-chairman and Dr. Pepper was elected secretary-treasurer. To facilitate the operations of the board, Mr. P. M. Hutchinson, Des Moines, was elected assistant secretary-treasurer.

In the early meetings of the board, considerable discussion centered about its mission. There was unanimity in the appreciation of the necessity for control, but the questions arising dealt essentially with the objectives and how they might best be derived. It was generally agreed that the board would perforce set certain basic requirements and regulations for admission to its examination. The encouragement of graduate training in one or other basic science and a more liberal acceptance of a range of clinical disciplines reflected the catholicity of the several members of the original board.

The original brochure of directions to prospective examinees contained such expressions as, "Broad general principles for training, however, may be outlined, although such suggestions as are made must, of necessity, be subject to constant changes reflecting the dynamic nature of the specialty." Reference was further made to "practical experience under the guidance of older men who bring to their clinical problems ripe knowledge and critical judgment." Then, too, "The board does not consider it to the best interests of internal medicine in this country to specify rigid rules as to where or how the training . . . is to be obtained. Medical teaching and knowledge are international." Finally, "The responsibility of acquiring the knowledge as best he may rests with the candidate, while the responsibility of maintaining the standard of knowledge required for certification devolves on the board."

EARLY PROBLEMS

As to the primary objective, there was no division within the board regarding the ultimate design to improve the quality of internal medicine by elevating the standards of its practitioners. At this juncture, there was a wide division among the members. Even the designation, internist, was variously defined, although Dr. Pepper at a later date wrote a classical dissertation on the subject. Some maintained that to carry the hallmark of certification by the board, the physician would have to qualify as a consultant. Others held that mere graduate training would classify this group above the family counselor. When one of the board members suggested that in his opinion only 3 physicians in the United States, Drs. James Herrick, Henry Christian, and David Riesman, would qualify, reason prevailed. The test of quality would be set by the level of the examinations. The chairman named two committees: "Credentials and Qualifications" and "Examinations."

Meanwhile, an important aspect of the certification of established internists received serious consideration by the board. Popularly termed the "grandfather's clause," in the interest of equity and uniformity certain fundamental criteria were established for the recognition by certification without examination. In the adviser group were included (1) chairmen of departments of medicine in approved medical schools of the United States and Canada, (2) officers and regents of the American College of Physicians, and (3) members of the Association of American Physicians who were internists and at least 45 years old. The founder group was much broader in terms of similar consideration. Three classes were recognized: (1) professors and associate professors of medicine in approved schools of medicine of the United States and Canada, (2) internists who had practiced the specialty for ten years and held membership or fellowship in certain representative special societies, and (3) internists of fifteen years' standing who were recommended by the executive committee of the section on the practice of medicine of the American Medical Association.

Under the chairmanship of Dr. Bierring, the American Board of Internal Medicine thrived. From the outset, the co-operation of responsible leaders in medicine in arranging and conducting the written examinations simultaneously throughout the country proved an important element in the success of this venture. The written examinations of the board were originally of the conventional thesis type. Their formulation and correction constituted a serious burden from the beginning. These circumstances led to continued study and ultimate revision of the written examination (Part I). Dr. Bierring's long experience on the National Board of Medical Examiners lent force and prestige to the development of these examinations. The practical examinations constitute an even greater challenge in organization and coordination. Given at different medical centers over the nation at different times of the year for the convenience of the applicants, the staffs of a number of hospitals have arranged for the selection of appropriate patients with complete records for the mutual accommodation of examiners and examinees. Furthermore, guest examiners have supplemented the members of the board in all instances in the conduct of the arduous task of the practical examinations that to be effective must be searching. In the American tradition, teamwork from patient to staff to guest proctors and examiners to members of the board ultimately pays tremendous dividends in the assurance of improved medicine to our fellow citizens.

The geographic separation of the operating assistant secretary-treasurer, Mr. Hutchinson (Des Moines), from the legally responsible secretary-treasurer, Dr. Pepper (Philadelphia), proved anomalous and cumbersome. At the board meeting of April 6, 1938, Dr. Bierring was re-elected chairman, Dr. David P. Barr, vice-chairman, and Dr. William S. Middleton, secretary-treasurer. As a matter of record, it should be noted that the secretary-treasurer assumed this responsibility only on the condition that Dr. William A. Werrell would serve as assistant secretary-treasurer. His acceptance assured the stability of the central office in Madison.

Members of the board come, faithfully and effectively discharge their duties for set terms, and retire with a gratifying sense of a substantial contribution to the commonweal. Dr. Werrell is the golden thread of continuity. Deeply steeped in the mores and traditions of the board, he is more than the stabilizing administrator. His idealism, vision, and perceptive grasp of the mission of the board have won the universal respect, the high esteem, and the affection of his associates.

OFFICE IS MOVED

The transition of the operation from Des Moines to Madison was officially scheduled for July 1, 1938. Dr. Bierring was reluctant to relinquish certain prerogatives but readily agreed that a single control point for records and finances was essential to effective operation. At a period (July to December 1938) when the correspondence between Dr. Bierring and the secretary-treasurer was somewhat strained by the efforts of the latter to consolidate the working tools, that is, records, files, deposits, and so forth, in Madison, Dr. Bierring maintained his rare gift of humor. In a postscript to an official letter of July 22, 1938, he wrote, "Hereafter, when you ask the trembling candidate, 'Who was Corrigan?', you know the answer that will be forthcoming." This comment related to a facetious answer of a candidate to my question regarding Dr. Dominic Corrigan that Dr. Bierring had overheard. The complete records reached Madison by December 1, 1938, and the small banking account ($120) was closed with the Bankers Trust Company Bank, Des Moines, June 3, 1939.

An amusing incident relating to the loss of a borrowed portable typewriter creeps into the official correspondence. On September 12, 1938, Dr. Bierring wrote that on the movement of the meeting room of the board at the Waldorf-Astoria on April 2, 1938, assurance of the safety of all property had been vouchsafed by the management. On his return, the typewriter was missing. The loss was compounded by the fact that the machine was the property of Alpha Omega Alpha, honorary medical society. On September 28, 1938, Dr. Bierring reported that the typewriter had been found in a pawnshop in New York. The board was billed for overhauling the restored typewriter and for six months' rental of another substitute required while the former was in hock.

SUBSPECIALTIES

The American Board of Internal Medicine early recognized its responsibility of leadership to the subspecialties. In fact, the premature initiation of 2 such boards without the formal approval of the Advisory Board for Medical Specialties gave ample notice of the impending danger. In a statesmanly resolution of December 11, 1937, drafted by Dr. Reginald Fitz, the American Board of Internal Medicine set forth the sound thesis of the basic requirements for all internists, whether general or subspecialized. The appropriate recognition of the several subspecialties of internal medicine and the assignment of responsibility with the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals served 2 immediate purposes. In the first place, it set basic standards that assured broad general training before certification in a subspecialty of internal medicine. Then, by a single stroke, it assured the dignity and growth of the subspecialty by the removal of the stigma of restricted vision. The subspecialty boards in allergy, cardiovascular disease, gastroenterology, and pulmonary disease work directly with the parent body, the American Board of Internal Medicine, to the mutual advantage of all concerned.

DR. BIERRING'S DEDICATION

Although Dr. Bierring's official connection with the American Board of Internal Medicine terminated June 30, 1939, his interest was unabated. He regularly arranged the proctorship of local written examinations and for a number of years, particularly during World War II, served as guest examiner for the practical examinations. Dr. Werrell repeatedly sought his advice in matters of policy. When the expansion of acceptable training for candidates was under discussion by the board (1947) in response to an inquiry from Dr. Werrell, Dr. Bierring wrote, "There were always a number of promising internists who for good reasons were not able to complete the formal residency period of training. I am delighted with the continued progress of the board and appreciate your keeping me posted."

Although Dr. Bierring held Certificate No. 1 of the American Board of Internal Medicine dated July 1, 1936, in his later years he coveted a further mark of recognition. January 15, 1959, he wrote to Dr. Werrell regarding certification in the subspecialty of cardiovascular disease. To the credit of the subspecialty board, this honor was accorded this worker in the vineyard.

Closing on a more personal note, my duties called me to Des Moines on March 29, 1960, to speak to a conference of area chiefs of surgery of the Veterans Administration. There had been a heavy snowstorm and the weather was most inclement. My associates told me that Dr. Bierring had been asked to introduce me; but, after accepting their invitation, he had suffered an attack of pneumonia and could not come. Later in the afternoon, I was dismayed to learn that he had insisted on attending. Against my earnest protestations he made his appearance. With his old school courtesy and flowing command of English, he gave his audience an accurate, if over-flattering, account of my antecedents and background. Ever vivid in my memory will be the picture of my old friend who would permit neither illness nor weather to interfere with the amenities of our profession. The mark of Walter L. Bierring will long be on the American Board of Internal Medicine—yes, on American medicine.

GREATER CONTROL of bleeding from gastrointestinal varices justifies portal-systemic shunt procedures in patients with cirrhosis of the liver. If the splenic vein is of adequate size—at least 13 mm. in diameter on the splenic portogram if the shunt is to be 1 cm. or more in diameter—splenorenal is better than portacaval shunt. Compared with the splenorenal procedure, a satisfactory portacaval shunt is easier to construct but has a higher operative mortality rate and a much higher incidence of postoperative neurological symptoms due to ammonia intoxication. Splenorenal shunting controls bleeding almost as well as does portacaval shunting, and the long-term survival rate is equal or better. Portacaval shunting was responsible for 9 operative deaths in 51 patients, splenorenal shunting for 5 deaths in 69 patients. Eliminating emergency operations, the death totals were 5 in 44 portacaval and 4 in 67 splenorenal shunts. Among the 106 survivors, seven-year survival rates were 37% for portacaval and 44.5% for splenorenal shunts. Both types were associated with postoperative gastrointestinal bleeding in about 25% of patients, compared with 66% for patients with splenectomy only. Symptoms of ammonia intoxication occurred in 12 patients after portacaval shunts and in 3 after splenorenal shunts.

GEORGE A. HALLENBECK, ERIC E. WOLLAEGER, MARTIN A. ADSON, and ROBERT P. GAGE: Results after portal-systemic shunts in 120 patients with cirrhosis of the liver. Surg. Gynec. Obstet. 116: 435-442, 1963.

Recollections in the Life of Walter L. Bierring, M.D.

F. J. L. BLASINGAME, M.D.
Chicago

The passing of Dr. Walter Lawrence Bierring in his beloved Des Moines two years ago marked a sad day for American medicine.

This patriarch of medicine was my personal idol and ideal. We were close and fast friends for nearly twenty-five years, and the friendship was easy and natural. His genius, greatness, gentleness, and wisdom intrigued and inspired many a man, young and old.

While the end came as Dr. Bierring neared his ninety-third birthday, he never seemed to grow old. He appeared almost changeless as far as aging was concerned but sustained an exceptional reactiveness and interest in the world about him. Through his close association with all facets of American medicine, even in later years, he kept on living and working as though he expected to live forever. A cartoonist once cleverly pictured Dr. Bierring looking at his emptying hour glass and, smiling, pushing it toward Father Time with the instructions: “Fill ’er up again, boy!”

Life splattered Dr. Bierring’s path with many exciting and memorable footprints. His service to medicine and the humanities could be divided into 3 periods of approximately twenty years each. His career as a teacher included seventeen years at 2 universities, the State University of Iowa and Drake University. In the ensuing twenty years, he conducted an active consultation practice in internal medicine, and for another twenty years he was principally concerned with public health administration as Iowa State Commissioner of Health, a job he assumed at age 65, a time when most men are ready for retirement.

A MAN WITH MANY TALENTS

I came to know Dr. Bierring through his many years of service to the American Medical Association. He represented the Iowa State Medical Society in the House of Delegates for the first time in 1903. From then on, he served twenty-one years in the House.

He possessed many talents in good measure; he obviously had a brilliant mind; his fields of interest were almost limitless. Even though he had had an amputation of most of one of his lower limbs, this physical impairment appeared not to handicap him; instead, this circumstance and others seemed to bring about a disciplined life which allowed him to move steadily forward on many fronts.

“—Fill ’er up again, Boy!”

F. J. L. Blasingame *is executive vice president of the American Medical Association, Chicago.*

My contacts with him covered several obvious areas of interest. He was a great believer in the philosophy of the first rate and he demanded a high degree of excellence of himself and for the medical profession. He was one of the founders of Alpha Omega Alpha, an honorary medical society, and can be given credit for doing more than any other single person to establish this society and extend its influence in medical education.

For a number of years, the society held its national meeting during the annual session of the American Medical Association. Dr. Bierring was the master of ceremonies on these occasions continually for about twenty-five years. He enjoyed these formal dinners, and he was instrumental in arranging the programs. It became an institution to see him introduce, from memory and without notes, a number of celebrities at the head table and in the audience; his store of knowledge was very apparent. These introductions were amazingly accurate, precise, in good taste, and often contained a twinkle of humor. Many times they were tied to an anecdote related to the particular person being presented. I recall his being able to recite from memory, in chronological order, the prominent essayists and the titles of their papers.

AN ENTHUSIASTIC TRAVELER

Even after Dr. Bierring was approximately 85 years of age, he traveled into the Middle East, though risking his life, to establish foreign chapters of Alpha Omega Alpha.

The year 1933 was an especially eventful one for Dr. Bierring. In June he was named president-elect of the American Medical Association, and, on July 1, he took over as Iowa State Health Commissioner. As a member of the House, as president-elect, and as president of the American Medical Association, Dr. Bierring exemplified leadership in its truest sense. His dedication to work was always blended with qualities of great benevolence and kindness that endeared him to all who had the good fortune to be associated with him, privately and professionally.

Actually, when Dr. Bierring served his term as president-elect and as president, the foresight reflected in his utterances indicated he was a man ahead of his time. For example, at the American Medical Association convention at Cleveland in June, 1934, he said that "with the evolution in technology, the development of industry, and the political economic changes, modern society has come to expect a new order of medical service different from that demanded a generation ago."

ALERT TO THE CHANGING ORDER

In his presidential address a year later, speaking on "The Family Doctor and the Changing Order," he said, "While we treasure the rich heritage that runs back into the sources of the past, we have come to recognize that much of the old has passed away. A changing order is bringing new problems into the practice of medicine such as have not been encountered before. Therefore, the time has come to look forward and try to read the days ahead in the light of what has happened in the past."

He definitely foresaw at that time a change in medical practice, because in the same address he said, "A new sort of clientele is emerging for the doctor of the future that will call for all the social and intellectual adaptability at his command. In this new order of society, there is a call for a different type of family doctor or general practitioner than was required a generation ago. Although of somewhat different mold, he will be the central figure in the field of medical practice as in the ages past. He is the basic doctor of tomorrow and of the new order. It is for him that medical faculties will be enlarged, courses of study extended, and physical equipment utilized to the highest degree. He will approach the threshold of medicine with a broad cultural training in the natural sciences and the humanities so that he can read aright the faults of heredity and the laws of eugenics to interpret more readily the problems underlying the biologic delinquencies which constitute the greatest burden of modern society."

PLEADS FOR UNITY

With characteristic grace and style, Dr. Bierring, drawing on his experience as a teacher and educator, once stood before the AMA House of Delegates and closed a speech with these words:

"From all over this broad land, the doctor looks to you, members of this House of Delegates, in fullest faith and confidence, not to solve the problem in one day, but in your wisdom and in the spirit of unity and solidarity to point the way for each to follow.

"Out of the land of drought, which has tried the very souls of men, they come with the simple prayer, 'Give us but a little rain and we will carry on stronger than before.' "

Here, indeed, Dr. Bierring proved himself a builder of two-way bridges between organized medicine and the profession itself.

In connection with his many activities in the field of public health, Dr. Bierring maintained his interest in medical education and particularly in the specialization of specialists.

His interest in testing knowledge of medical school graduates led to organization of the National Board of Medical Examiners in 1915. His stout character and high moral standards did much to establish this organization as important and influential with the various state medical boards. In truth, I believe he deserves credit, more than any one other individual, for the progress that has been made in recent years in strengthening influence at the national level. He was also desirous of having state medical boards work closely with the American Medical Association and having the association make regular contributions of $3,000 annually to financing the federation's publication.

When he concluded his presidential term at the Atlantic City meeting in June, 1935, he told the House that he had traveled 67,000 miles during the year and that he possessed "a feeling of pride and fervent faith that all still goes well in American medicine." The Reference Committee, studying Dr. Bierring's address as an outgoing president, commended him "for the breadth of view expressed and for his scholarly grasp of the association's activities."

VIGOROUS A.M.A. PRESIDENT

He was a great believer in the utilization of organizational structure in implementing his ideas; a strong believer in the county, state, and national American Medical Association relationships. He was an outstanding president of the American Medical Association and was particularly vigorous, utilizing his numerous friendships with prominent individuals in interceding with President Franklin D. Roosevelt to have Section 7 removed from the original social security bill, this seventh section being the one which would call for compulsory health insurance and lead immediately to the socialization of medicine.

At one time, Dr. Bierring showed me correspondence which he had in his files and spoke with considerable force and vigor about the numerous trips and interviews which he had during the early and mid-1930s in which he carried on a valiant fight against compulsory health insurance. His influence was likely responsible in good measure for President Roosevelt reaching the conclusion that the proposal of socialized medicine was too radical for the American people.

In his spare moments, Dr. Bierring loved to chat with his many friends and reminisce about "the good old days." His stories were many. He recalled how his graceful penmanship helped him earn his way through a course in business college, and he was proud of working under Prof. Ernst, a former assistant of Prof. Robert Koch, discoverer of the tubercle bacillus, during his postgraduate studies at the University of Heidelberg.

STUDIED UNDER EUROPEAN MASTERS

At the University of Vienna, he had an opportunity to study under the masters of that day. There was Prof. Theodor Billroth, a pioneer in antiseptic and visceral surgery in Europe. In 1884 he had the special privilege of being a student at the Pasteur Institute, in Paris, under the eminent French scientist, Dr. Louis Pasteur, father of bacteriology, and his associates, Drs. Eli Metchnikoff and Emile Roux. He often referred to Pasteur as "a modest, genteel, retiring scientist," and then added, "Dr. Pasteur was interested in only one thing—to be of service."

While Dr. Bierring was at the Pasteur Institute, the preparation of diphtheria antitoxin was first developed on a large scale. He used to say proudly: "In 1895 I prepared the first diphtheria antitoxin west of New York City."

HIS LAST VISIT WITH PASTEUR

Dr. Bierring was the only physician I ever knew personally who had been a student of Pasteur. I recall vividly his relating his last visit with the great scientist. It was at the time Dr. Bierring was completing his training and making plans as a young physician to return to the United States. Pasteur was in the late part of his career and had already suffered a stroke. He was in his office at the institute, sitting at his desk and wearing a small black skull cap, as was often his custom. Dr. Bierring related how he entered Pasteur's office and inquired in French, "Master, I plan now to take leave and return to the United States. I am grateful for all you have done for me. I wonder if you have any advice to give to a young physician starting out on his career." After a pause, Pasteur turned and said, "Young man, remember that chance favors the prepared mind."

Dr. Bierring knew Sir William Osler intimately. In fact, it was often said that their lives ran parallel in many ways. Far-reaching foresight certainly put both of them far ahead of their times not only in the actual practice of medicine and in their theories regarding the teaching of medicine but also in the formulation of medical ideals.

Dr. Bierring reminisced of Osler: "Osler brought teaching to the bedside and the impact of the laboratory to every institute training physicians in the country. He had a wonderful knowledge of human nature, and his personality attracted many young men. He was also profoundly educated in the classics."

The great surgeon, Billroth, was far ahead of his time, too. Dr. Bierring often recalled that "way back in 1892, Billroth was operating and removing part of the stomach and the kidney."

One thing is certain. All of these great men, Billroth, Pasteur, Osler, and others, gave Dr. Bierring a chance to fill up his energetic mind, and it was from that reservoir that he drew for the rest of his life.

These medical masters taught him to be proud and unbending in honest failure but humble and gentle in success; not to substitute words for actions, nor to seek the path of comfort, but to face the stress and spur of difficulty and challenge; to learn to stand up in the storm; to have a goal that is high; and to reach into the future, yet never neglect the past.

SEES EVOLUTION OF MEDICINE

The Des Moines sage saw the evolution of medicine for more than half a century. He saw this evolution from bacteriology and discovery of a definite cause of many diseases to their control—malaria, typhoid fever, yellow fever, diabetes, and pernicious anemia.

Probably one of the happiest moments in Dr. Bierring's life occurred in 1956 when he received the American Medical Association's distinguished service award, one of medicine's highest honors. He is the only past president of the association who has been so honored.

Even though this honor was bestowed upon him in the twilight years of his life, one could hardly say that he ever retired from the camp of organized medicine. He continued to attend all meetings of the American Medical Association and brooded over the many problems that the profession faced, forever preaching the doctrine of alertness, of adaptability to new conditions, of a fresh approach.

For me, Dr. Bierring represented a tie with the past. His vast experiences, his early training in Europe, his success in keeping abreast with the burst of knowledge in medical science, and his profound understanding of the socioeconomic environment of medicine made his conversations meaningful and lively.

The memory he left behind is one of integrity, selflessness, and devotion. Perhaps his most endearing qualities were his simplicity, his humility, his avoidance of praise. And modesty ran through his life like a gleaming thread.

The American Medical Association is grateful that he was spared to us for so many years and that his life was fruitful and productive to the very end. He forever held up before our eyes a vision of dedication and high purpose, and he left behind him the heritage of an inspiring life and of a noble work for the welfare of the profession and of mankind.

ENDOCERVICAL POLYPS should always be removed and studied histologically. In rare cases, malignant changes not detectable by cancer smears may take place in polyps allowed to remain. More commonly, these lesions may cause abnormal vaginal bleeding or leukorrhea. Simple torsion at the base, done as an office procedure, is usually sufficient to remove all but the largest polyps. Electrocautery destroys the base and insures hemostasis; recurrences are rare. When the polyp is associated with extensive bleeding, however, the procedure should be done in the operating room and accompanied by uterine curettage. Of 5,015 consecutive polyps removed, only 14 showed malignant changes, limited to the polyp in 4. All but 106 of 1,009 polyps studied more extensively were adenomatous, and the rest were primarily cystic or fibrous. Most polyps were single and 1 cm. or less in diameter. Patients were usually 40 years of age or older; 64% had passed menopause. The commonest symptom was abnormal vaginal bleeding, but three-fourths of patients were asymptomatic.

LEONARD A. AARO, LOREN J. JACOBSON, and EDWARD H. SOULE: Endocervical polyps. Obstet. and Gynec. 21:659-665, 1963.

Walter L. Bierring, M.D., and The National Board of Medical Examiners

JOHN P. HUBBARD, M.D.
Philadelphia

Few men are given the opportunity to strengthen over so long a period of time the enterprises that they themselves have helped to create. Such, however, was characteristic of that indomitable man of medicine, Walter L. Bierring.

One of the many established features of American medicine that today bears the mark of Walter Bierring is the National Board of Medical Examiners. The national board was established in 1915 during a decade that may be looked upon as a turning point in medical education and the qualifications required for the practice of medicine. During the first part of this decade, 1910 to 1913, Dr. Bierring was professor of the theory and practice of medicine at Drake University College of Medicine. This was at a time when medical schools were feeling the impact of the historic Flexner Report of 1910. In 1913 he was appointed president of the Iowa State Board of Medical Examiners and, thus, became actively engaged in medical licensure, an interest that he never relinquished.

NATIONAL BOARD ESTABLISHED

When the Federation of State Medical Boards was organized in 1912 to promote uniformity and co-operation among the individual state licensing boards, Dr. Bierring became the federation's secretary and editor, positions which he held until the day of his death nearly fifty years later. At midpoint in this decade, the National Board of Medical Examiners was established as a voluntary and unofficial agency "to establish a standard of examinations and certification of graduates in medicine for the whole United States and its territories through which, by co-operation of the state and territorial boards of medical examiners, its licentiates may be recognized for licensure to practice medicine." Dr. Bierring, already a prominent figure in the fields of medical education and medical licensure, was among the founding fathers.

The name of Walter L. Bierring is closely linked with that of William L. Rodman in the creation of the national board. On June 22, 1915, Dr. Rodman, who was then president of the American Medical Association, announced in his presidential address that the national board had been organized. It was Dr. Rodman's aim to establish a qualifying examination of such high character that successful candidates could be safely admitted to the practice of medicine by all state boards of medical licensure without a further examination. He also thought that such a test would provide a known group from which physicians could be safely chosen for positions demanding an exceptionally thorough medical training. The House of Delegates of the American Medical Association referred the matter of an endorsement of the board to its council on medical education for study and report. The council met with the executive committee of the board in Washington, D. C., on November 27, 1915, and adopted a resolution unanimously favoring such a board.

The following year, 1916, Dr. Rodman died suddenly, and Dr. Bierring was elected to the national board to fill Dr. Rodman's unexpired term and to represent the Federation of State Medical Boards. As a member of the national board, Dr. Bierring was to play a prominent part in the development of the system of examinations that continued for the next thirty years.

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The last half of this memorable decade of 1910 through 1920 saw the beginnings of the national board. Progress was slow until after World War I. Then, in 1919, Dr. Bierring, accompanied by Col. Louis A. LaGarde, who held the position of treasurer of the national board, visited England, Scotland, and France to observe and to study the qualifying examinations conducted by the Royal College of Surgeons, the Conjoint Board of England, the Triple Qualification Board of Scotland, and the system of examinations conducted by the French Ministry of Public Instruction.

A VISIT WITH OSLER

In reviewing the record of this mission, it is quite apparent that one of the high points was a visit with Sir William Osler in Oxford, England, on July 30, 1919. Happily, we have a photograph taken upon the occasion of this visit showing Dr. Bierring and Col. LaGarde with Sir William in his garden in Oxford, only a few months before Sir William's death from pneumonia in December of the same year. And happily, also, we have an account of this visit in Dr. Bierring's own words taken from an address entitled "Medical Echoes" (published in Alpha Omega Alpha's *Pharos,* Volume 13, April, 1940). With a memory for detail that was so characteristic of Dr. Bierring, he describes his visit as follows:

"My traveling companion, Col. Louis A. LaGarde, M.C., United States Army, and I came from London and arrived in Oxford at the luncheon hour. Lady Osler met us at the station with her Franklin car. We were soon at 13 Norham Gardens, 'Happy Arms.' Dr. Osler met us on the veranda with a greeting such as only he could give. He might have been Sir William to others, but he was still the same Dr. Osler as we knew him in the good days before he came to Oxford in 1905.

"We were aware that the medical world had taken notice, some two weeks before, of his seventieth birthday in London, where Sir Clifford Allbutt, regius professor at Cambridge, presided. At this memorable occasion, 2 volumes of *Contributions to Medical and Biological Research* were presented on behalf of his pupils and co-workers. Sir Clifford Allbutt in presiding said, 'To me as one of your oldest friends in time, and perhaps the oldest in age, has fallen the honor of announcing our celebration of your seventieth birthday—one anniversary of many years of supreme service in two kindred nations and for the world.'

Walter L. Bierring, Sir William Osler, and Col. Louis A. LaGarde, M.C., U.S.A., at Dr. Osler's home, 13 Norham Gardens, Oxford, England, July 30, 1919.

"We, too, could testify that age had dealt kindly with Sir William. Although the black mustache had changed to gray, the last fifteen years seemed to have passed unnoticed. In the old-time twinkle of the eye, the warming smile, elastic boyish-like activity, we saw Dr. Osler as his American friends had always known him. In his many inquiries about American colleagues, one appreciated how he still entertained the warmest sympathies for America and her institutions, associated, as they were no doubt, with some of his happiest memories.

"Although he had to assume many new duties during the war period, his interest and sympathies continued to be directed in promoting the highest ideals in medicine. His deep interest in the purpose of our visit can serve as one such example.

"For a long time, the idea had been in the minds of leading clinicians and medical educators in the United States that the best means to elevate the standards of medical practice was to develop, of national scope, a central qualifying board expressive of the highest type of medical training in our country. As an outgrowth of this sentiment, the National Board of Medical Examiners was established in 1915.

"Sir William had always been interested in qualifying examinations. In an address delivered at the opening of a winter session of Saint George's Hospital Medical School on October 1, 1913, on 'Examinations, Examiners, and Examinees,' he severely criticized the character of the final examinations of the Royal College of Surgeons because of the high percentage of failures. He also gave expression to the following: 'As the best means to an end, examinations may be the best part of an education or the worst. They may be its very essence or its ruin . . . Helpful in an integral part of the training, they may and do prove the intellectual ruin of many good men . . . '

"The hour had come to say adieu. There was that in the words at parting, 'Mighty glad that you boys came out,' and in the final wave of the hand that left a delightful impression of our visit to Oxford, more treasured with the passing of the years."

BRITISH-FRENCH COMMISSION

Following the return of Dr. Bierring and Col. LaGarde to the United States, a plan was set in motion to bring a joint British-French commission to the United States to visit American medical schools and to observe an examination of the National Board of Medical Examiners, which by that time had been fashioned in the pattern of the British boards. Dr. Henry Pritchett, president of the Carnegie Foundation for the Advancement of Teaching, was approached and promptly gave his approval. An invitation was conveyed to Dean Roger of the Faculty of Medicine of the University of Paris and to each of the secretaries of the examination corporations of England and Scotland to appoint representatives. This resulted in a commission comprised of Sir Humphry Rolleston, of the Royal College of Physicians, London; Sir Holburt Waring, of the Royal College of Surgeons of England; Sir Norman Walker, of the Royal College of Physicians of Edinburgh; Dr. Gustave Roussy, professor of medicine, and Dr. E. E. Desmaret, professor of surgery, both of the Faculty of Medicine of the University of Paris.

In a detailed and comprehensive review of the first twenty-five years of the national board, upon the occasion of the twenty-fifth anniversary dinner of the board in New York City on June 12, 1940, Dr. Bierring described the visit of the British-French commission as follows: "They arrived in New York in April 1920, and after a brief visit in Washington, where they had an interesting conference with the secretary of war, The Honorable Newton D. Baker, proceeded to New Orleans for the annual session of the American Medical Association, followed by visits to St. Louis, Iowa City, Rochester (Minnesota), Minneapolis, Chicago, Cincinnati, Cleveland, Detroit, Ann Arbor, New York, and Baltimore, ending at Philadelphia to attend an examination of the national board.

"The members of the visiting commission were able to meet the members of the board, either in their homes or at the examination in Philadelphia, as well as the deans and faculty members of leading medical schools, and larger clinical teaching hospitals, which evidently left the happiest impression of the standard of medical teaching and practice prevailing in this country. The privilege of meeting these distinguished foreign physicians was likewise appreciated at the different medical centers included in the tour.

"Soon after the return of the visitors to their homes, the board was advised by Sir Norman Walker that the Triple Qualification Board of Scotland had taken action to admit the diplomates of the national board to their final examination. As the national board took a similar action with reference to licentiates of the Scottish board, a reciprocal agreement thus became established. Soon after, a similar arrangement was completed with the Conjoint Examining Board of England. This recognition of the examining boards of England and Scotland marked an epochal event in the history of the national board."

DR. BIERRING IS HONORED

The spirit of closer international relations between the national board and Great Britain was further enhanced two years later in 1922 when Dr. Bierring returned to England and Scotland to receive from the Royal College of Physicians of Edinburgh honorary membership in the college in recognition of his services in promoting reciprocal relations between the British boards and the National Board of Medical Examiners. In accepting this honor on July 18, 1922, Dr. Bierring expressed his gratitude "for the unusual honor you have shown me in breaking the precedent of over one hundred years to confer the diploma of honorary membership in your college." He then continued: "While deeply conscious of the personal distinction, I feel it has been your desire to recognize in this manner the National Board of Medical Examiners of the United States. In its efforts to elevate the standards of medical education and practice, as well as to promote closer relations between your country and ours, therefore, on behalf of my colleagues on the national board, I bespeak their profound appreciation for this honor offered to them. In thus extending the hand across the sea, you are but cementing the bonds of fraternal fellowship that the Medical School of Edinburgh helped to form in the earliest development of medical education in America."

During his long and productive career, Dr. Bierring never lost his active interest in the expanding work of the national board. He was its president in 1928 through 1930 and continued as an ever-willing consultant and elder statesman.

On many occasions, the board called upon his wise counsel; he never failed to give his strong and effective support, as for example, in more recent years when certain state boards were expressing dissatisfaction with change in the examination methods of the national board and the conversion from the essay type of question to the multiple-choice form. Dr. Bierring was never averse to change as long as change meant progress; he used his influence to promote better understanding between the national board and the state boards to the end that both groups should work together toward the mutual objective of improved qualifying examinations.

It was at this time that, in a letter to the executive secretary, he emphasied once again his enduring view of the board's purpose: "The national board was established to develop a comprehensive test that would be a criterion of medical training in this country, and it will continue to be the last testimonial for evaluating medical education in America as it evolves to meet the demands of medical service."

This was the dream that he saw in the decade of 1910 to 1920 and that he did so much to bring into reality by the time of his death at a vigorous age of almost 93.

FOCAL ISCHEMIC cerebrovascular disease is treated by surgical intervention or anticoagulants according to indications in rigidly selected patients. Therapy is directed toward prevention of cerebral infarction or extension of an evolving cerebral infarct. Patients with stable infarcts are generally not candidates for either surgical or anticoagulant therapy in so far as existing deficit is concerned. New ischemic phenomena are treated according to the manifestation of the ischemia. A stroke progressing with neurologic deficit calls for anticoagulants. Patients with incipient strokes whose attacks persist only a few minutes may be treated by either anticoagulants or operation. Surgical treatment is applied principally to patients whose arterial lesions are extracranial and stenotic. Cerebral angiography provides data on cerebral blood flow and possible obstruction in extracranial vessels. Angiographic data must be considered carefully, however, since occlusive lesions may be asymptomatic. Observations are based on study of 335 patients with transient ischemic attacks during 1954 to 1958 for whom anticoagulant therapy was advised, 32 patients who were treated operatively, and 48 who received no treatment.

ROBERT G. SIEKERT, JACK P. WHISNANT, and CLARK H. MILLIKAN: Surgical and anticoagulant therapy of occlusive cerebrovascular disease. Ann. intern. Med. 58:637-641, 1963.

TEEN-AGERS may be deterred from smoking if older siblings do not smoke. Frequency of smoking is higher among teen-agers whose older siblings smoke than among those without older siblings or with ones who are not smokers, and smoking teen-agers tend to be from large families with older siblings. A study of 6,810 high-school students, their parents, and siblings forms the basis of these observations.

EVA J. SALBER, BRIAN MAC MAHON, and SARAH V. HARRISON: Influence of sihlings on student smoking patterns. Pediatrics 31:569-572, 1963.

Walter L. Bierring, M.D., and The American Board of Preventive Medicine

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Dr. Walter L. Bierring's long and distinguished medical career had many facets: He served as professor of pathology and bacteriology at his Alma Mater, the State University of Iowa, as professor of medicine at the same institution, as a distinguished practitioner of internal medicine, and as one of the great leaders in public health.

Throughout his career, there is also evidence of an abiding interest in preventive medicine, which culminated in his long service as Iowa State Commissioner of Health. His interests in this phase of medicine appeared early. As a medical student in 1890, he became interested in the new field of bacteriology and learned the fundamentals of the growth of pure cultures of microorganisms from Dr. Thomas H. MacBride, professor of botany at the university.

Immediately after graduation in medicine, he went to Europe to study under the men who were pushing forward the frontiers of knowledge of bacterial causes of disease, immunology, and pathology. He first studied at Heidelberg, Germany, and later in Vienna, Austria, where he mastered the techniques available at that time for the study of infectious disease. After a period of study at the Pasteur Institute in Paris, working under Pasteur, Metchnikoff and Roux, he returned to Iowa City where he developed the first laboratory capable of producing diphtheria antitoxin west of New York. His interest in infectious disease was broad, and he established the beginnings of a public health laboratory which later became the State Public Health Laboratory. The influence of the early German concept of the "Institute of Hygiene" was apparent in Dr. Bierring's entire career.

During his period of practice of internal medicine, he continued his interests in the preventive aspects of medicine and served as president of the Iowa State Board of Health for nine years. He had great influence in strengthening state public health activities and in improving public health practices during this time. In 1933, at the age of 65, he was persuaded by the governor of Iowa to become the state health commissioner. During his long career in this capacity, he emphasized the necessity for specialist training in the field of public health, and he stimulated many young men to obtain formal training and experience in this field.

Dr. Bierring was one of the strongest proponents of postgraduate training in the specialties. This interest in high standards of training was demonstrated in his activities leading to the creation of the American Board of Internal Medicine with its standards of postgraduate training and examination program. His interest in the Advisory Board for the Medical Specialties and through it the development of high standards of training and accomplishment had a far-reaching influence on the general quality of specialty care in the United States.

AMERICAN BOARD OF PREVENTIVE MEDICINE

World War II clearly demonstrated the importance of preventive medicine, particularly in the military services. The need for skilled specialists in preventive medicine was illustrated repeatedly under combat conditions. In 1945 the surgeons general of the United States Army, Navy, and Public Health Service jointly appointed a group to develop standards of training and competence

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for recognition as specialists in preventive medicine and public health. The surgeons general asked this group to develop methods of examination for a form of certification in the field of preventive medicine and public health.

This committee, I believe wisely, pointed out that there was a mechanism for recognition of the specialty through the approved specialty boards and that anything short of that would not be in the interests of the development of the specialty and its recognition. A small committee made up of representatives of the section on preventive medicine of the American Medical Association, the American Public Health Association, and the surgeons general's committee met to develop plans for an approved specialty board.

Dr. Bierring was a member of this group and expressed strong feelings that high standards of training and experience should be established, that a board should be incorporated, and that it should seek the approval of the Advisory Board for the Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association. Dr. Bierring was active in drawing up the requirements to be met by applicants for certification and in the development of the mechanism of examination to determine competence in the field. His long experience with the American Board of Internal Medicine, whose Certificate No. 1 had been awarded to him, his long association with the Advisory Board for the Medical Specialties, and his close association with the Council on Medical Education and Hospitals made him the natural leader of the group which eventually was able to obtain the approval of the Advisory Board for the Medical Specialties and the Council on Medical Education and Hospitals of a specialty board in preventive medicine and public health. His leadership was such that no one else could be considered for the chairmanship of the new board, a position which he held until shortly before his death.

As a very young man, Dr. Bierring studied and taught penmanship, developing a fine spencerian hand. His signature was a work of art, and though in the course of his career he signed thousands of certificates, every signature was the same and perfection to the last.

AVIATION MEDICINE

One of Dr. Bierring's most surprising characteristics was his constant interest in new developments and new ideas, some of which were thought visionary even by much younger men. Not long after the creation of the American Board of Preventive Medicine and Public Health, a group of United States Air Force officers and civilian aviation medicine directors proposed that the specialty of aviation medicine should be recognized. They emphasized that it was quite largely preventive in nature and, therefore, might be in some way affiliated with the American Board of Preventive Medicine.

Dr. Bierring received this suggestion with great enthusiasm and developed a keen interest in aviation medicine. At the invitation of Surgeon General George Armstrong, of the United States Air Force, and General Otis Benson, commandant of the School of Aviation Medicine, a committee of the board under Dr. Bierring's leadership visited the School of Aviation Medicine. After reviewing the training program offered and observing the research that was being carried on in this new and rapidly developing field, Dr. Bierring became one of the strongest proponents of certification for specialists in this area. At his suggestion, the board voted to change its name from the American Board of Preventive Medicine and Public Health to the American Board of Preventive Medicine, offering certification to qualified specialists in public health and in aviation medicine. This was at a time when there was much feeling that there were already too many specialty boards and that fractionation of medicine was undesirable.

One of the most memorable occasions in the history of the board was a meeting at which Dr. Bierring, supported by General George Armstrong, General Otis Benson, General Sam White, and Dr. Louis Bauer, presented the case for aviation medicine as a part of preventive medicine before the Council on Medical Education and Hospitals and the Advisory Board for the Medical Specialties. Dr. Bierring's eloquence and his surprising knowledge of the new field, together with his prestige, had a great deal to do with the approval by the council and the advisory board of the proposed change in the American Board of Preventive Medicine.

Dr. Bierring's interest in aviation medicine continued, and he thoroughly enjoyed visits to the School of Aviation Medicine in San Antonio, Texas, developed by the United States Air Force, and the school in Pensacola, Florida, developed by the United States Navy. Even in his ninetieth year, he was anxious to know of the new developments in this and the other fields of preventive medicine and never missed an opportunity to make site visits to, as he said, "learn of the new developments." I am sure that he would have highly approved of the recently proposed change in the designation of aviation medicine to aero space medicine, because he would never have wanted to see any limitation to the development of medical knowledge.

OCCUPATIONAL MEDICINE

The American Board of Preventive Medicine and Public Health had certified a number of leaders in the field of occupational medicine who had received broad general training in preventive medicine and whose careers had led them into occupational medicine. Some of the more active proponents of this field of medical activity, including Drs. Robert Kehoe, Adolph Kammer, and James Sterner, recognized the need for formalization of training in occupational medicine if the needs of industrial workers were to be adequately provided for and high standards of prevention of disease maintained. The American Board of Preventive Medicine received a formal request for consideration of a similar provision for this area of medical practice as that developed for aviation medicine. Again, Dr. Bierring was enthusiastic because he saw an opportunity through specialty board recognition to elevate the standards of occupational medicine, a field that was not new to him.

He saw in the American Board of Preventive Medicine what he called an "umbrella" which could bring under the aegis of preventive medicine the related fields of public health, aviation medicine, and occupational medicine. Again his enthusiasm, broad vision, and eloquence were important factors in obtaining approval of the Advisory Board for the Medical Specialties and the Council on Medical Education and Hospitals for another change in the board providing for certification for properly qualified specialists in occupational medicine.

In each of these new developments, Dr. Bierring was primarily interested in being assured that there was an established body of knowledge in the specialty field and that there were adequate training opportunities to assure high standards of training in the related specialties. He insisted upon a basic core of formal and practical training in preventive medicine plus a high level of training in the particular field of preventive medicine.

He showed great interest in the program of approval of residencies in each of the special fields and thoroughly enjoyed making site visits to residency programs searching for new methods of training that would assure higher and higher standards.

He was vitally interested in examination techniques. At first he was somewhat skeptical of the multiple-choice type of examination to which many boards have had to resort in order to cover the broad fields of specialization, but he became convinced that it was an effective means of examination if properly constructed and administered. He took an active part in the development of the examinations and in the review of the results of the examinations taken by applicants. He was very much aware of the necessity for a young board to maintain high standards and have adequate assurance of the competence of the individual considered for certification. His naturally kindly nature made it difficult at times for him to vote for failure, particularly repeated failure, of an applicant. But when the results of the examination were carefully reviewed and the applicant did not meet the required standards of the board, he never failed to concur in the decision.

A GENTLE FAILING

His one failing, if it can be called a failing, was his interest in and sympathy for people. In the oral examination it was difficult for him to seriously mark down a candidate who had not shown up well on the examination. One of the records of the oral examination was to indicate on a normal curve the position of the candidate in relationship to the universe of applicants. Dr. Bierring's ratings were invariably on the high side with rarely an average rating. Occasionally, the board found it necessary to take this into consideration and balance examining teams on which Dr. Bierring served with hard-boiled realists.

After serving for a decade as chairman of the board, Dr. Bierring insisted on rotation. His interest in the board was so great and his counsel so valuable, however, that he was invited to attend all meetings of the board after his retirement from active membership. At one such meeting, we all felt that Dr. Bierring was not as well as he had been at previous meetings. Finally, we discovered that he had what turned out to be a severe phlebitis, but he stayed through the meetings of the board and only permitted hospitalization when the last work was done. He missed one meeting shortly before his final illness for a reason typical of his activity. He was installing a chapter of Alpha Omega Alpha in Beirut, Lebanon, shortly prior to the scheduled meeting of the board. He did not appear at the board meeting, but we received a cablegram saying that he was being delayed in Lebanon by a revolution.

Serving with Dr. Bierring on the American Board of Preventive Medicine was a delightful and inspiring experience. He was more alert than most men thirty years his junior, and he had a dedication to high standards of the practice of medicine equalled by no one that I have ever known. He also had a delightful sense of humor, and meetings were frequently enlivened by his stories of his own experience. He told us of one experience, characteristic of his sense of humor and his alertness, which happened when he was 85 years old and his term as state health commissioner was coming to an end. Somewhat to his surprise, the governor of the state called him in and asked him if he would be willing to serve another term. Dr. Bierring's reply was, "Mr. Governor, do you have the courage to go before the Senate of the state of Iowa and recommend an 85-year-old man for a six-year term?" Very appropriately, Dr. Bierring was made head of the department of gerontology in the Iowa State Department of Health, in which capacity he served with distinction until his death.

I had the pleasure of meeting Dr. Bierring quite unexpectedly in Paris in 1957. He had just been to visit the room that he occupied when he was studying at the Pasteur Institute sixty-three years before. He said he found it very much as he had left it and that he had seen an old woman there who he thought might have been the young girl who was so nice to him when he was studying there.

Dr. Bierring was one of those rare people who retain alertness, interest, and enthusiasm well past the Biblical three score and ten years. His contributions to medicine and health were great all through his life, and he had a long life in which to contribute.

PEDIATRIC SIGNS can give forewarning of future adult difficulties with vascular occlusive disease, allergic disease, infections, and genitourinary disease. Efforts to prevent or cure the diseases should begin in early life. Control of cholesterol is indicated during pregnancy in women who intend to breast-feed their infants, since the fat content of breast milk probably accounts for high cholesterol concentrations in nursing infants. In addition, the use of unsaturated fats in infant diets might cause them to reject excessive amounts of highly saturated fats throughout life. To prevent later pulmonary fibrosis, scarring, and emphysema, the cause of asthma in children should be determined and either eliminated or made ineffective by desensitization. Similarly, acute and quiescent infections should be vigorously treated in childhood to prevent the destruction and consumption of reserves which will be necessary for the stress of aging. Children also should be checked frequently for signs of urinary tract infection associated with obstruction, a condition which appears to be increasing in this age group.

FREDERIC GERARD BURKE: Pediatric signposts to premature aging. Ariz. Med. 20:81-88, 1963.

SECRETIN RESPONSE of the duodenum to acid stimulation in dogs is reduced significantly by duodenal freezing. Average total response to hydrochloric acid infusion after freezing is lowered to 28.2% of control mean response. Impairment lasts for at least three months. Freezing for longer than ten minutes does not increase depression of secretin response. Mortality from necrosis is not a danger at the ten-minute point, but the mortality rate rises to 42.9% when freezing lasts for twenty minutes. These conclusions are based on observations of 23 dogs subjected to duodenal freezing at inflow temperatures ranging from −17 to −20° C.

ROBERT L. GOODALE, JR., EUGENE F. BERNSTEIN, JOHN SOUCHERAY, and OWEN H. WANGENSTEEN: Effect of duodenal freezing on the secretin mechanism. Proc. Soc. exp. Biol. (N. Y.) 112:738-740, 1963.

An Internist's Adventures in Public Health in Minnesota

EDWARD L. TUOHY, M.D.*

THE JOURNAL-LANCET for several years has been a forum for historical reviews pertaining to medicine and its associated disciplines. The April issue for over 30 years was devoted to a recital of the methods by which tuberculosis, or any other controllable disease, may be "met and conquered."

Another extremely important source of information on the prevention and control of tuberculosis in man and animals is *Invited and Conquered*.[1] For Minnesotans, it is as well a historical collection of prime interest, as it includes excellent photographs and reviews of the lives of the men and women who developed Minnesota's medical societies, instituted needed legislation along health lines, and fostered the growth and scope of the medical school at the University of Minnesota.

PERSONAL HISTORY

Let us now go back to the turn of the century, and I shall attempt to relate some of the highlights of my life that made me something of a zealot, and at times a "pest," as far as the St. Louis County Medical Society was concerned.

In 1900, the public was keenly aware of the death-dealing menace of consumption, particularly the galloping type. Born on a farm near Chatfield, Minnesota, in 1878, I lived not more than 20 miles from the county seat at Rochester. Of a neighboring farm family, 3 girls became consumptives. One died. Another, about 1905, had an operation for the removal of the cervical lymph nodes and lived for several years. I have lost track of the third daughter in the family.

All of us had the feeling that consumption was the hereditary allotment of that family—and that many fair-skinned Irish girls were to a degree doomed by that fatal touch of beauty, so plaintively portrayed in books and magazines. We felt that little could be done about tuberculosis. Not until this neighbor's cattle were tested for tuberculosis about 1915 and most were found to be infected did the problem of prevention come much closer to home.

Several of my cousins, who later died of tuberculosis, had been my closest playmates, but none of us in the immediate family ever developed anything suggestive of active tuberculosis. However, from my earliest testings, I have been a positive reactor, as were most of my fellow practitioners in Duluth, Minnesota. As I recall, only one died of the disease. Thus I not only had a feeling as to how widespread tuberculosis infection was but also the feeling that many persons, through some sort of resistance, were not likely subjects for the disease, and I always remember especially the lecturer who was kind enough to give his impression that "certain individuals just could not possibly develop tuberculosis!"

Drs. Herbert Giffin and Walter Sheldon, writing from the Mayo Clinic in 1915, summed up the impression of medical clinicians that "Scientific investigation demonstrates that tuberculosis is a well-nigh universal disease." To many people, this meant that any measure for warding off such a disease was like heading off or preventing cyclones.

Public Health. After graduating from medical school in June 1905, I was chosen by the State Board of Health to establish a branch laboratory for the Board in Duluth, Minnesota, which was centered in St. Mary's Hospital. In retrospect, I realize that I was not well fitted technically for the work, but I had the imprimatur of the University through Dr. Frank Wesbrook, who later became the dean of the medical school, and Dr. H. M. Bracken, who for many years was the belligerent executive of the State Board of Health. Little laboratory work was done in the hospitals or in the offices of the doctors in Duluth at that time, and whatever deficiencies I

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may have had were unnoticed—or lost in the shuffle! I immediately became mixed up in a medley of everything pertaining to medicine, and from this situation, I may frankly state, I never escaped. Everyone, including the doctors, was cooperative, and if space permitted I would give many examples of the support I received.

In general, I was happy and well adjusted, and it seems to me now that I had entered the field of medicine at a most favorable time. There certainly was no lack of opportunity to do something about preventable disease. Tuberculosis, as well as typhoid, diphtheria, and other contagious diseases, was common. I examined countless nose and throat cultures for diphtheria. Antitoxin had come into general use, but in some ways it favored the development of carriers, and to find and isolate them was tedious and complicated.

TUBERCULOSIS IN MINNESOTA

Most of the great epidemics of the past have not lost their deadly faculty. Only by eternal vigilance is visitation of plagues prevented by the alertness of our health authorities at every port of entry of our country. A former Minnesota intern wrote to me about his service in a large charity hospital in Louisiana:

> Every day was an unparalleled experience. The hours were drastically long—often forty to sixty hours at a stretch. I was on pediatrics, emergency and contagion. . . . Many of the diseases which have been conquered elsewhere were commonplace. It was not unusual to see a dozen cases of spinal meningitis, two or three of diphtheria, a case of tetanus and smallpox, all in a single night. We had many two- and three-month-old infants with widespread tuberculosis; and, indeed, this disease was so common that it was assumed to be present, until proved otherwise, in any sick infant.

This shows just how far we are from total eradication of many diseases.

History. The remainder of this paper aims to discuss the technical and administrative barriers to a real advance in the control of tuberculosis. Perhaps, out of the experience involved, an evaluation of current diagnostic measures, for example, in nervous and mental disorders, may be projected into preventive measures along many and varied fields of medicine.

Identification in its incipiency is, of course, the greatest consideration to be given to any transmissible disease. Unfortunately, the search for early cases of tuberculosis was almost futile in the first decade of this century. This search stemmed primarily from the teaching of Trudeau and his predecessors, particularly in Germany, that consumption could be cured if found early enough and strict rules of fresh air and rest were meticulously instituted. The pioneer work of Trudeau and his many followers at Saranac Lake seemed to point the way, and the first projection of that movement to Minnesota was instituted by the late Dr. H. Longstreet Taylor of St. Paul.

The first public sanatorium in the state was the Minnesota State Sanatorium at Ah-Gwah-Ching. It was soon found that practically all the cases sent there, or, in fact, those assembled in any sanatorium of that period, were well-established or advanced cases of tuberculosis. So astute a general observer of all disease in all aspects as William James Mayo was heard to say, as he looked up at the visitors in the St. Mary's Hospital operating theater, "Gentlemen, as far as I have been able to observe, the only cases of tuberculosis known to ever leave the sanatoria alive are those sent there under a wrong diagnosis!" I feel that there was much evidence to support his pessimism, but he missed the highest value of sanatoria—isolation for humane care and prevention of infection among contacts. There was a great need for developing an awareness that tuberculosis, while establishing the reputation for being "the captain of death," was still an escapable menace.

In Duluth, an antituberculosis group, made up for the most part of men and women whose relatives or friends had died of tuberculosis, was organized. Doctors were the most difficult to enthuse over any form of group action. In 1906, about a year after I came to Duluth, a nurse took me to see a man who was dying of tuberculosis in his own home. I found his wife aware of the situation in which she and her 5 children, 3 to 14 years of age, lived. After the man passed away, I sought out the family and got the mother's permission to test the oldest boy, Jalmer, by injection with Old tuberculin. I did not have long to await a reaction. Jalmer's arm swelled, his temperature rose to 103°, and he clearly was sick. I found rales at his right apex, where I had not heard such before. The mother reacted more violently than did the boy. She rushed at me with eyes blazing, even as a grizzly bear might rush to the defense of her cub, roaring, "Why did I ever let you inject that awful stuff? Why, it would produce a fever if you had injected it into a stone. Why didn't I listen to Doctor X, who told me that that stuff was dangerous and did no good?" I was crestfallen but not dismayed. I saw this boy for a number of years, and he remained healthy. Again I pondered the question. "What is immunity and how is it produced?"

In 1908, I was a delegate to the International Congress on Tuberculosis, held in Washington, D.C. There I had the opportunity to see the great workers in tuberculosis prevention from many countries of the world. It was stimulating to see the bemedaled Robert Koch of Germany, despite his obvious evidences of age, and to see Trudeau, spirited but tired looking and always surrounded by his admirers. However, the great message that I brought back from this congress was the positive declaration of Arthur Newsholme of England that "the key to the control of tuberculosis is to abandon the effort to round up the early cases for treatment, and to boldly segregate—even in almshouses—as many cases of late and well advanced tuberculosis as possible, because they are the great distributors of tubercle bacilli."

There was much said about fresh air treatment, and, as I reported to the State Board of Health, as many types of tuberculin for treatment were advanced as the 57 varieties of pickles so widely advertised at the time. In addition, there were many exhibits, and even a few of heavy glass roentgenograms of the chest. These received little mention, and most of the delegates felt that they were not worthwhile because, after all, what we were looking for were evidences of *activity* rather than signs of pulmonary consolidation.

As soon as I returned, our committee in Duluth brought pressure on the St. Louis County Poor Farm board, and soon we had erected a concrete barrack for about 30 men with well-advanced tuberculosis. I shudder to recall the exposure of these men in subzero weather, but we did give them Klondyke sleeping bags, à la Saranac Lake, and we felt much better about it, ensconced in our own warm beds! We were all more or less "nuts" on fresh air but used it with a degree of caution personally.

Prompted by the zeal which I showed, the State Board of Health sent me, in 1910, to visit and report upon the principal sanatoria on the eastern seaboard and in the Midwest. I came back doubly assured that the type of construction which followed in the first rush to fight tuberculosis was not suited to our climate, either in winter or summer. With little delay, suitable legislation was put through, and the well-known regional or county sanatoria, of which Nopeming and Glen Lake became the effective prototypes, were built. The story of the men and women involved in furthering this great plan is given in my chief source of material, *Invited and Conquered*.[1] Nearly fifty years have elapsed since we opened the doors of Nopeming Sanatorium for patients. It is a favorable time to assess accomplishments, as well as the extent or need of continued watchfulness.

Current status. There is no more brilliant example of public health accomplishment, through enlistment of personal participation, than has been exhibited by every community in Minnesota in the Christmas seal campaigns. This fully implemented mass enthusiasm must not be allowed to atrophy. There are still many needful areas for similar popular group action.

To marshall public interest, Dr. Mario Fischer, health officer for the Duluth area, has been writing a series of articles on behalf of the St. Louis County Medical Society for the *Duluth Herald*. This attempt on behalf of the county medical societies to create public interest in health campaigns is most refreshing and is a marked contrast to what I observed in my first contacts with organized medicine a half-century ago. I was anxious to learn from Dr. Fischer to what degree tuberculosis detection depended upon mass roentgen films. I put this question chiefly because I have felt for some time that doctors have been oversold on the dependence given to a report such as "Essentially negative x-ray film." Dr. Fischer provided the following information.

The fate of the first ambulant unit, after it did yeoman and brilliant service, especially in St. Louis County, hints at what is happening. This unit, given to the Antituberculosis Society as a result of one of its first large procurements of funds through the sale of Christmas seals, now rests in the Ely Historical Museum. This is fitting, since it was in the Ely area that history was made in this method of mass ambulant roentgen surveys. The need for such surveys decreases as the positive results decline. The widespread use of Mantoux testing among children uncovers the occasional open case of tuberculosis.

And what about the installation of fluoroscopic units in the large hospitals for the routine checking of all patients on entrance? Apparently, these have never been successful, though the defect is not always in the method or equipment. Often, physicians, looking for a sign or symptom of a particular disease, overlook shadows suggestive of pulmonary tuberculosis or tell the patient to keep under observation.

Dr. Fischer closes his remarks on roentgen inspection with this illuminating comment:

> The most productive installation of x-ray equipment is the unit in the Court House, where all the prisoners sent to the county jail or work farm are x-rayed. This segment of society is contributing the largest number of new cases in St. Louis County. . . . Despite the fact

that tuberculosis is no longer the number one cause of death, the decline in the number of cases has not kept pace with the death rate. Six hundred Minnesotans were discovered as new active cases of tuberculosis last year. The state Tuberculosis Case Registry numbers close to 100,000 people, of whom better than 5,000 are Indians.

CONCLUSION

It was the tuberculin test, effectively used on animals, that removed a definite route of transmission of tuberculosis to human beings. It is certainly the Mantoux test as applied to fresh contacts which points the way to the elusive active source of human infection. And now, with commanding and effective antibiotic pharmaceuticals, together with occasional surgical removals of resistant foci, it appears that the actual "conquering" of tuberculosis is only a matter of time.

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1. Myers, J. A.: Invited and Conquered. St. Paul: Webb Publishing Co., 1949.

PROCTOSCOPY and digital examination of the rectum afford clues to the nature of tumors encountered as anterior extrarectal masses in women. Only about one-fourth of such tumors are in the gastrointestinal tract; about three-fourths arise in the genital tract. The genitourinary lesions encountered most often are endometriosis, uterine fibromyomas, and retroverted uterus. An endometrial mass often makes it impossible to pass a proctoscope 25 cm. Patients are generally 30 to 50 years old and have complaints referable to the intestine rather than to the genitourinary tract. Masses due to retroverted uterus also tend to occur in younger women, 30 to 40 years old. Fibromyomas seen as extrarectal masses are commonest in women 40 to 60 years of age. Nontender extrarectal masses, extrinsic to the intestine and located high in the pelvis of women more than 60 years old, are probably of ovarian origin. Carcinoma of the ovary is commonest. The most frequent causes of masses arising from the gastrointestinal tract are pathological developments in the large intestine, such as diverticulitis and adenocarcinoma. Observations are based on findings from 106 tumors.

RAYMOND J. JACKMAN, CLYDE E. CULP, and ARTHUR B. HUNT: Anterior extrarectal masses in the female. Surg. Gynec. Obstet. 116:741, 744, 1963.

PYLOROPLASTY has been modified to provide rapid and effective drainage in vagotomy, segmental resection of the stomach, and other procedures that denervate the pyloric muscle. The Heineke-Mikulicz type of pyloroplasty excises a transverse segment of pyloric muscle over the anterior surface of the pylorus, including that muscular segment destined to become "dog ears." In the modification, however, the pyloric muscle is lifted through the serosa with an Allis forceps and a portion excised without cutting the mucosa or entering the lumen. The serosa is then reapproximated over the mucosa and the lumen remains patulous. The technique is possible only if the anterior wall is unscarred and uninvolved with underlying ulcer.

J. BRADLEY AUST: A new technique for pyloroplasty. Surgery 53:309, 1963.

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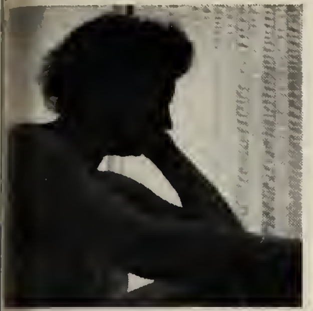
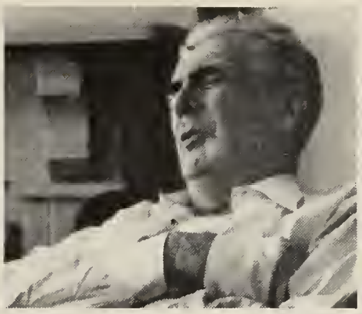

The insomniac

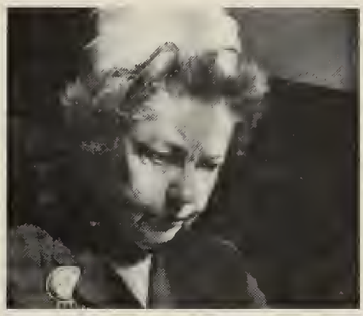
The tense, nervous patient

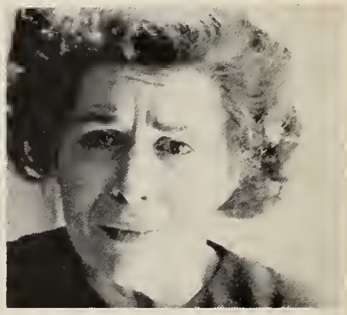

The heart-disease patient

The surgical patient

The girl with dermatosis

Tension headache


The woman in menopause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Book Reviews . . .

Atherosclerosis: Mechanisms as a Guide to Prevention

CAMPBELL MOSES, M.D., *1963. Philadelphia: Lea & Febiger. 239 pages. Illustrated. $8.00.*

Dr. Moses, associate professor of medicine and director of the Addison H. Gibson Laboratory, University of Pittsburgh, has written an excellent reference book. Each one of the 13 chapters has a magnificent bibliography, often with from 200 to 300 references.

Regarding the causation of atherosclerosis, Dr. Moses says that it is the result of the interplay of several local and systemic factors. Among these are the hydrodynamics of blood flow, the filtration and local synthesis of beta-lipoproteins, changes in the elastic properties of the vessel wall, changes in the mucopolysaccharide matrix of the wall, and, especially, local changes which facilitate the local deposition of fibrin. Of major importance are the vulnerability of the vasa vasorum to rupture and the role of intramural hemorrhage in facilitating the local deposition of fibrin.

The systemic factors are genetic, hormonal, dietary, and environmental. These can influence the metabolism of lipoproteins, the level of blood pressure, and factors favoring the coagulation and deposition of fibrin.

Dr. Moses agrees that there is more atherosclerosis in young males than in females under the age of 40. After this age, he points out, the sexual difference fades out. Cerebral atherosclerosis is often minimal even in the later decades of life.

In men, obesity, even uncomplicated by hypertension, is associated with a significant increase in atherosclerosis only in the coronary arteries. For women, obesity without hypertension has no effect upon the severity of atherosclerosis. Hypertension in men is associated with significantly increased coronary and cerebral atherosclerosis, and with an increased occurrence of myocardial infarction. In women, hypertension is associated with an increased amount of atherosclerosis in most of the arteries studied. Dr. Moses is still in doubt as to the significance of the presence of cholesterol in atherosclerotic plaques.

In discussing the significance of hormones, Dr. Moses emphasizes the point that diabetes is extremely important in the production of atherosclerosis. Dr. Bell, the great pathologist for years at the University of Minnesota, found that among diabetics over age 40, some 23 percent of the deaths were due to vascular lesions. Among diabetics over the age of 50, 54 percent died of vascular lesions. These lesions were predominantly peripheral gangrene and renal and coronary disease. Dr. Moses also mentions Dr. Henry Dolger, who concluded that regardless of the severity of the diabetes or the degree of control of the disease achieved by treatment, in the cases of all patients suffering from long-standing diabetes mellitus, accelerated vascular damage was the inevitable fate. Coronary disease caused about half of all the deaths among the diabetics who had a long-standing type of the disease.

Chapter 7 will interest many persons because it covers the identification of individuals likely to get atherosclerosis. As Dr. Moses says, there is no doubt about the fact that an increase in arterial blood pressure will increase the rate of development of atherosclerosis. In the Framingham (Mass.) study, in the cases of men from 40 to 59 years of age, hypertension greater than 160 mm. was associated with a three-fold increase in the risk of coronary heart disease. With hypercholesterolemia and left-ventricular hypertrophy added to the hypertension, the risk of coronary heart disease was still greater.

In Chapter 8 on heredity and atherosclerosis, Dr. Moses talks particularly of the familial xanthomatosis, which is associated often with a very high level of blood cholesterol.

In Chapter 9 Dr. Moses discusses data which strongly indicate that smoking increases the likelihood of a man's getting coronary heart disease. Exercise appears to be helpful, if taken in moderation.

Chapter 11 is on the effects of emotional stress. Dr. Moses thinks the evidence indicates that emotional stress will influence both the level of circulating lipids and the occurrence of coronary heart disease. However, he is not in favor of making people live a life of utter tranquility.

In Chapter 12 there is an excellent discussion of the many drugs which have been used with the hope of lowering the level of blood cholesterol. Dr. Moses does not recommend any particular drug, however.

In the last chapter, Dr. Moses agrees that overweight persons should cut down on the amount of fats and number of calories consumed. It is well to substitute a reasonable amount of vegetable oils for saturated fats, but, as Dr. Moses says, even on a cholesterol-poor diet, a man's body can go on manufacturing the substance. We still need more evidence to indicate that the lowering of the level of blood cholesterol will prevent the coming of atherosclerosis, heart attacks, and strokes.

WALTER C. ALVAREZ, M.D.
Chicago

Hutchison's Clinical Methods

DONALD HUNTER, M.D., *and* R. R. BOMFORD, D.M., *fourteenth edition, 1963. Philadelphia: J. B. Lippincott Co. 454 pages. Illustrated. $6.75.*

The first edition of *Clinical Methods* was written by a young medical resident, Robert Hutchison, in the last decade of the nineteenth century. Evidence of the permanent popularity of this book is the fact that it has gone through 14 editions during the last seventy-odd years. Its original author was a physician to the London Hospital, as are the current editors.

There is no exact counterpart in American medical literature to this work. *Clinical Methods* encompasses not only what is ordinarily included in a textbook of physical diagnosis in this country but also has much to say on laboratory methods. Like American texts in physical diagnosis, the chief audience to which the authors aim their text is made up of medical students in their clinical years. The size of this book, 5 inches by 7½ inches, suggests that it is intended to be slipped into the pocket of the medical student or intern.

The volume takes up the matters of history taking, general and special examinations, methods of securing laboratory specimens, and laboratory investigations in

(Continued on page 20A)

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(Continued from page 18A)

about the order that these subjects would be presented by a patient to a physician in the hospital. The work is profusely illustrated with photographs and drawings. The cases selected for illustration are often far advanced and hardly "typical." There are certain hazards to the American doctor using this English text. One would have no doubt what the description of a ventricular septal defect as the size of a sixpence means. But if an American reads that an interatrial septal defect is the size of a penny, he might have a minified picture of the described septal hole. What we call a fluid wave is described as a fluid thrill.

The work is up-to-the-minute. Obviously, there is little left other than the preface of Hutchison's original edition. Perhaps the diagnosis of dyspepsia mentioned in the current text is the present authors' kowtow to the first edition.

REUBEN BERMAN, M.D.
Minneapolis

Neuroradiology Workshop, Volume II: Intracranial Tumors Other than Meningiomas

LEO M. DAVIDOFF, M.D., HAROLD G. JACOBSON, M.D., *and* HARRY M. ZIMMERMAN, M.D., *1963. New York City: Grune & Stratton. 402 pages. Illustrated. $22.50.*

This is the second volume of a series of four that are to be published on problems encountered in neurology with special emphasis on neuroradiology. The first volume, published in 1961, primarily concerns tumors of the scalp, skull, and meninges. This volume discusses tumors that originate from the brain itself, the cerebral blood vessels, ependyma and choroid plexus as well as congenital and metastatic neoplasms. It is anticipated that the third volume will include intracranial lesions other than neoplasms and the fourth volume diseases of the spine.

The general format of this second volume is the presentation of cases encountered on the surgical and medical neurological services of Montefiore Hospital. Each case is discussed in reasonable detail relative to history, physical and neurological examination, radiological, surgical, and pathological data. Cases seem to have been selected to illustrate specific pertinent basic concepts of neuroradiology. The discussions are clear and concise. Emphasis throughout the volume is on the necessity of team work—of the need to know the entire clinical picture in order to establish the correct diagnosis. Comments on the cases reveal a maturity of judgment.

Unfortunately, reproduction of the x-rays is not always of a quality adequate to demonstrate a specific abnormality. In part, this is overcome by the use of arrows as pointers and by a precise discussion of the lesion by the radiologist. The bibliography is short and not particularly up-to-date; however, the text is not a reference volume; it is written more as a training course for surgical and medical neurologists and for the occasional neuroradiologist. For these it raises practical, clinical questions and gives an appropriate discussion from which the reader can profit.

LYLE A. FRENCH, M.D.
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News Briefs . . .

General

DR. GEORGE RYAN, Winnipeg, is new president of the Minnesota-Dakota-Manitoba Orthopedic Society. He succeeds Dr. J. J. McLeod, Jr., Grand Forks, N. D. Other officers are Drs. Dan R. Bigelow, Winnipeg, secretary, and Walter Indeck, Minneapolis, reelected treasurer.

North Dakota

DR. BERNARD B. HUSS, JR., who recently completed a first-year residency in surgery at Beckley Memorial Hospital, Beckley, W. Va., has been appointed to the staff of the Medical Arts Clinic, Minot. He served in the surgical service at McDowell Memorial Hospital, McDowell, Ky., and was in the preventive medicine unit at Norfolk, Va., while in the U. S. Navy. Dr. Huss is a graduate of Ohio State University College of Medicine, Columbus.

◦ ◦ ◦ ◦

DR. ALBERT C. KOHLMEYER, Fargo psychiatrist, told the Clergymen's Cardiac Conference in Fargo that personal, often family oriented, conflicts cause emotional problems for the cardiac patient and may complicate his recovery. The patient's minister can help by informing the attending doctor of such conflicts. The Reverend P. M. Gilfillan, chaplain at St. Barnabas Hospital, Minneapolis, stressed the need for "an adequacy of theology and philosophy" in assisting sick persons. He believes the ideal minister to the sick has spiritual maturity, is intuitive, and is a good listener. Nearly 100 area clergymen representing many faiths attended the conference, which was sponsored by the Minnesota and North Dakota Heart associations.

◦ ◦ ◦ ◦

DR. DONALD BREEN has joined the McLean Clinic in Hillsboro. For the past two years, he has been in the U. S. Air Force, stationed at Sawyer Air Force Base near Marquette, Mich. He began his medical education at the University of North Dakota School of Medicine and studied for the last two years at Marquette University School of Medicine, where he received his medical degree in 1960. Dr. Breen interned at St. Mary's Hospital, Milwaukee.

◦ ◦ ◦ ◦

DR. B. F. AMIDON, Fargo, has succeeded Dr. Ralph J. Dukart of Dickinson as president of the North Dakota Society of Obstetrics and Gynecology. Other officers are Drs. Clyde L. Smith, Bismarck, vice-president, and G. Wilson Hunter, Fargo, reelected secretary-treasurer.

◦ ◦ ◦ ◦

DR. VICTOR SZYRYNSKI has been elected vice-president of the Academy of Psychosomatic Medicine after serving as secretary of the academy for the past three years. He is professor and chairman of the Department of Psychiatry, University of North Dakota. Dr. Szyrynski, a member of the American Psychiatric Association, will serve as a program chairman for the annual meeting of the Academy of Psychosomatic Medicine in New York City next October.

(Continued on page 22A)

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NEWS BRIEFS

(Continued from page 21A)

Minnesota

DR. JOHN H. ROSENOW, Minneapolis general surgeon, has accepted a full-time editorial position with Modern Medicine Publications in Minneapolis. A graduate of Harvard Medical School, Boston, Dr. Rosenow is a diplomate of the American Board of Surgery and fellow of the American College of Surgeons.

* * * *

DR. THEODORE LESTER, who operated the Browns Valley Community Clinic for the past three years, has moved to Fridley to begin practice.

* * * *

DR. E. A. THAYER, Fairmont is president-elect of the Minnesota chapter of the American Academy of General Practice. President is Dr. William H. A. Watson, St. Paul. Dr. Chester A. Anderson, Hector, is vice-president and Dr. Herb Huffington, Waterville, is secretary-treasurer.

* * * *

DR. ROBERT B. PIERCE, who was associated with Dr. W. C. Stillwell in North Mankato for the past two and a half years, has established a medical practice in Mountain Lake. Previously, Dr. Pierce had practiced for ten years in Renville. He is a member of the American Academy of General Practice.

* * * *

DR. ROBERT CULLEN, associated for five years with Drs. Robert Gruys and John A. Watkins in Wells, has announced a move to Elmore. Dr. Cullen was graduated from Indiana University School of Medicine, Indianapolis. He is a member of the American Academy of General Practice.

* * * *

DR. HAROLD F. FLANAGAN, St. Paul, is president-elect of the American Academy of Pediatrics. He will assume the office next October and has been succeeded as district chairman of the academy by Dr. George B. Logan of the Mayo Clinic, Rochester. Dr. Flanagan is chief of staff at Ancker Hospital, St. Paul, and an associate clinical professor of pediatrics at the University of Minnesota. He earned his M.D. degree at the University in 1927. He is past president of the Ramsey County Medical Society, Northwestern Pediatrics Society, and Minnesota Academy of Medicine. Dr. Flanagan is a director of St. Thomas College, St. Paul.

* * * *

DR. A. D. WALDEN, a 1959 graduate of the University of Texas Medical Branch, Galveston, has begun practice at LeSueur. He has been a U. S. Navy medical officer serving in Japan and, most recently, in Philadelphia.

* * * *

DR. DALE EICHELBERGER, Alexandria, has joined the Fergus Falls State Hospital medical staff. He received his medical degree from the University of Minnesota Medical School in 1960. Dr. Eichelberger has completed service with the U. S. Navy and is a member of the American Academy of General Practice.

* * * *

DR. WILLIAM L. CHRISTIAN has completed military service with the U. S. Air Force in Syracuse, N. Y., and

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returned to Austin, where he was previously associated with Drs. Paul Leck and James A. Nesse. He joins Drs. Nesse and J. P. Milnar.

* * * *

DR. RALPH E. SMITH, Rochester, has assumed the presidency of the Minnesota Heart Association, succeeding Dr. Jesse E. Edwards, St. Paul. Other officers are Dr. William Mazzitello, St. Paul, president-elect; Dr. Reuben Berman, Minneapolis, secretary; James A. Ritt, St. Paul, treasurer; and Mel Dickie, Rochester, second vice-president.

* * * *

DR. MANSUR TAUFIC has joined the medical staff of the Community Memorial Hospital, Spring Valley. He will continue to live in Austin where he practiced general surgery. Dr. Taufic is a diplomate of the American Board of Surgery and a fellow of the American College of Surgeons.

* * * *

DR. VICTOR C. WELCH has assumed duties as chief of staff at the Veterans Administration Hospital, St. Cloud. He replaces Dr. Joseph Marcovitch, who has become assistant superintendent at Elgin State Hospital, Elgin, Ill. Until recently, Dr. Welch has been on the staff of the Veterans Administration Hospital in Perry Point, Md.

* * * *

DR. HENRY L. WILLIAMS, specialist in diseases of ear, nose, and throat, has joined the University of Minnesota Medical School faculty since retiring as senior consultant at the Mayo Clinic, Rochester. He was head of the clinic's otolaryngology and rhinology section from 1951 to 1958. Dr. Williams will be in charge of graduate medical training in diseases of ear, nose, and throat at the Veterans Administration Hospital, Minneapolis. Dr. Williams' research interest is in deafness and inner ear difficulties affecting balance and equilibrium.

* * * *

DR. C. WALTON LILLEHEI, pioneer in use of open heart surgery for correction of congenital and acquired defects of the heart, is one of six recipients of the annual Gairdner Foundation awards for contributions to the advancement of scientific medicine. The foundation cited Dr. Lillehei's "continuing contributions to both the theoretical as well as the practical aspects of cardiac surgery." Dr. Lillehei joined the University of Minnesota Medical School staff in 1945, advancing from medical fellow to full professor of surgery. The other U. S. award recipient is Dr. Irvine H. Page, director of research at the Cleveland Clinic, an expert in cardiovascular disease, and editor of *Modern Medicine.*

South Dakota

DR. ALFRED POORE, retiring psychiatrist at the Veterans Administration Hospital, Fort Meade, was honored by colleagues in the ward to which he has been attached for the past several years. He has been at the hospital since 1947 and, although primarily working in the psychiatric service, he served the medical department for a period of time. A 1932 graduate of Boston University School of Medicine, Dr. Poore was a member of the staff at the Veterans Administration Hospital,

(Continued on page 24A)

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STATEMENT OF OWNERSHIP MANAGEMENT AND CIRCULATION (ACT OF OCTOBER 23, 1962. SECTION 4369. TITLE 39. UNITED STATES CODE) 1 NOVEMBER 11. 1963. 2 THE JOURNAL-LANCET. 3. PUBLISHED MONTHLY FROM 4. 6STN AT VALLEY VIEW ROAD. SOUTHDALE PARK EDINA MINNESOTA S5424 WITH 5. GENERAL BUSINESS OFFICE LOCATED AT 6STH AT VALLEY VIEW ROAD SOUTHDALE PARK EDINA, MINNESOTA 5S424. 6. PUBLISHER L. M. COHEN 6STN AT VALLEY VIEW ROAD, SOUTHDALE PARK EDINA, MINNESOTA SS424 EDITOR: JAY MYERS, M.D., 6STH AT VALLEY VIEW ROAD SOUTHDALE PARK EDINA, MINNESOTA SS424 MANAGING EDITOR MARK PARKER, 6STN AT VALLEY VIEW ROAD, SOUTHDALE PARK, EDINA, MINNESOTA SS424. 7. OWNER LANCET PUBLICATIONS INCORPORATED, 6STN AT VALLEY VIEW ROAD, SOUTHDALE PARK, EDINA MINNESOTA 55424 STOCKHOLDERS OWNING 1 PERCENT OR MORE OF ITS STOCK ARE BURTON D. CONEN MINNEAPOLIS MINNESOTA J. G. COHEN, ESTATE, MIDLAND NATIONAL BANK, TRUSTEE, MINNEAPOLIS, MINNESOTA L. M. COHEN MINNEAPOLIS MINNESOTA J. N. HER2, WINNETKA ILLINOIS M. E. NER2 EXCELSIOR, MINNESOTA MICHAEL J. NER2, HERMOSA BEACH, CALIFORNIA. MARJORIE 2ATS, MINNEAPOLIS, MINNESOTA. 8. BONDHOLDERS, MORTGAGES, AND OTHER SECURITY HOLDERS: NONE. 10A. TOTAL NUMBER OF COPIES PRINTED (AVERAGE NUMBER OF COPIES EACH ISSUE DURING PRECEDING 12 MONTHS) 2,112; SINGLE ISSUE NEAREST TO FILING DATE: 2,192. 10B-1. PAID CIRCULATION (AVERAGE NUMBER OF COPIES EACH ISSUE DURING PRECEDING 12 MONTHS) 1,1D3, SINGLE ISSUE NEAREST TO FILING DATE: 1,248; 10B-2. SALES THROUGH AGENTS, ETC. (AVERAGE NUMBER OF COPIES EACH ISSUE DURING PRECEDING 12 MONTHS) NONE, SINGLE ISSUE NEAREST TO FILING DATE: NONE. 10C. FREE DISTRIBUTION (AVERAGE NUMBER OF COPIES EACH ISSUE DURING PRECEDING 12 MONTHS) 724; SINGLE ISSUE NEAREST TO FILING DATE: 723. 10D. TOTAL NUMBER OF COPIES DISTRIBUTED (AVERAGE NUMBER OF COPIES EACH ISSUE DURING PRECEDING 12 MONTHS): 1,827; SINGLE ISSUE NEAREST TO FILING DATE: 1,971. I CERTIFY THAT THE STATEMENTS MADE BY ME ABOVE ARE CORRECT AND COMPLETE. BURTON D. CONEN, BUSINESS MANAGER.

NEWS BRIEFS

(Continued from page 23A)

Waco, Texas, from 1938 to 1942 and was a major in the U. S. Army Medical Corps during World War II.

* * *

DR. CARLOS MENDOZA, director of the Central South Dakota Mental Health Center, Huron, has been appointed staff psychiatrist at St. John's Hospital in Huron. A new psychiatric wing at the hospital is planned.

* * *

DRS. WENZEL KOVARIK and ARTHUR J. BARRETT, former classmates at Creighton University School of Medicine, Omaha, have started general practice in Rapid City. Both recently completed internship at Sacred Heart Hospital, Spokane.

Deaths . . .

DR. WILLIAM H. LONG, 71, Fargo physician for thirty-seven years, died at his home October 1, apparently by his own hand. Dr. Long was a 1912 graduate of the University of Minnesota. He practiced in Dickinson, N.D., from 1915 to 1921, then joined the Mayo Clinic in Rochester, Minn. He moved to Fargo in 1926. The Dakota Medical Foundation honored Dr. Long in 1958 by establishing the Darrow-Long Lectureship. From 1938 to 1939, he was president of the North Dakota State Medical Association and during 1941-47 was president of the Mayo Foundation Alumni Association. He was a member of the State Board of Medical Examiners in North Dakota for many years, a member of the Cass County Medical Society, fellow of the American College of Physicians, diplomate of the American Board of Internal Medicine, and member of the American Society of Internal Medicine.

* * *

DR. W. S. HITCHINGS, 79, who practiced in Lakefield, Minn., from 1915 to 1953, died at Phoenixville, Pa., October 9. In 1953 Dr. Hitchings joined the staff of Penhurst State School, Spring City, Pa., and remained there until his retirement two years later. Dr. Hitchings was graduated from the University of Minnesota Medical School in 1908 and began practice at Belgrade, Minn. During his long practice at Lakefield, he was active in the Methodist church and community affairs.

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DR. HAROLD E. HULLSIEK, 72, St. Paul, Minn., proctologist, died September 27 in Charles T. Miller Hospital. A member of the Miller Hospital staff until his retirement in 1959, he was a 1916 graduate of the University of Minnesota Medical School and member of the American Proctologic Society, the Ramsey County Medical Society, Minnesota State Medical Association, St. Paul Surgical Society, and Minnesota Academy of Science.

* * *

DR. JOHN J. BOEHRER, 52, died October 4 in his home at Orono, Minn. Death was apparently self inflicted. He had practiced internal medicine in Minneapolis for twenty years and was an associate of Drs. Raymond Scallen, William M. Schulze, and A. Boyd Thomes. A heart specialist who was chief of staff at Abbott Hospital, Minneapolis, in 1953, Dr. Boehrer retired from practice four years ago in ill health. He was a clinical associate professor of medicine at the University of Minnesota, a diplomate of the American Board of Internal Medicine, and a member of the American Society of Internal Medicine and of the American College of Physicians. He also was president of the Minneapolis Society of Internal Medicine and member of the Hennepin County Medical Society, Minnesota State Medical Association, Minnesota Society of Internal Medicine, and Minneapolis Academy of Medicine. He was graduated from Johns Hopkins University School of Medicine in 1936.

* * * *

DR. ERNEST GILBERT NETHERCOTT, 65, died September 27 at St. Mary's Hospital, Minneapolis, after practicing in Pine City, Minn., since 1929. The Lakeside Memorial Hospital in Pine City was founded by Dr. Nethercott in 1937. He was a native of Proctor, Minn., and interned at St. Luke's Hospital, Duluth, following graduation from the University of Minnesota Medical School in 1929.

* * * *

DR. HOWARD M. ODEL, 54, head of the section of medicine at the Mayo Clinic, Rochester, Minn., for six years before his retirement in 1959, died in Rochester, September 22 of hypertensive heart and kidney disease. He was graduated from Northwestern University Medical School, Chicago, in 1933 and interned at the Fifth Avenue Hospital, New York City. Dr. Odel joined the staff of the Mayo Clinic in 1938 as a consultant in medicine after three years as a fellow in the Mayo Foundation, University of Minnesota, and two years as a first assistant in medicine. He served in the U. S. Navy Medical Corps during World War II. Dr. Odel was a diplomate of the American Board of Internal Medicine, a fellow of the American College of Physicians, and member of the American Heart Association, American Federation for Clinical Research, the Central Clinical Research Club, the Zumbro Valley Medical Society, Minnesota State Medical Association, Alumni Association of the Mayo Foundation, Minnesota Society of Internal Medicine, and the Minnesota Society for the Study of Diseases of the Heart and Circulation. While at the Mayo Clinic, he investigated hypertension and other vascular irregularities associated with renal disease.

* * * *

DR. EDWARD L. TUOHY, 85, one of the founders of the Duluth Clinic, died September 27 in Santa Barbara, Calif. He gained national prominence in the field of geriatrics. He was graduated from the University of Minnesota Medical School in 1905 and did postgraduate work in Vienna, Berlin, London, Paris, and Rome. He was one of the founders of the Nopeming Sanatorium near Duluth and served on the St. Louis County Sanatorium Commission for more than thirty years. He served as chief of staff at the Nopeming Sanatorium and at St. Mary's Hospital in Duluth and for several years was president of the Duluth Clinic, where he headed the department of internal medicine. Dr. Tuohy was president of the St. Louis County Medical Society in 1927, the Minnesota State Medical Association in 1945, and headed the Minnesota Heart Association.

In 1951, he was awarded the University of Minnesota's Outstanding Achievement Award in recognition of his contributions as a "crusader for study and research in geriatrics." He became a member of the 50 Club in 1955 in honor of fifty years of practice in Minnesota. Dr. Tuohy was a diplomate of the American Board of In-

(Continued on page 26A)

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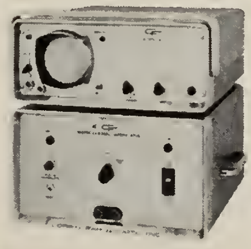

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DEATHS

(Continued from page 25A)

ternal Medicine and a member of the American Medical Association, American College of Physicians, Central Society for Clinical Research, Mayo Memorial Commission, and of the board of trustees of the University of Minnesota's Greater University Fund. He was active in the work of the Minnesota Society for Prevention and Relief of Tuberculosis, president of the Duluth Rotary Club during 1929-30, district governor of Rotary International during 1931-32, and member of the Duluth Chamber of Commerce. He was on the editorial board of *Geriatrics* magazine.

* * * *

DR. THEODORE SATERSMOEN, 82, died September 6 at the Pelican Valley Health Center, Pelican Rapids, Minn. He was a general practitioner who began practice in 1912 at Pelican Rapids, later practiced for a year at Ada, Minn., and then returned to Pelican Rapids in 1914. Dr. Satersmoen was a 1910 graduate of the University of Minnesota Medical School with additional study in diseases of eye, ear, nose, and throat in Chicago. He interned at Northwestern Hospital, Minneapolis. Dr. Satersmoen had served the city government in several capacities, being mayor for several years.

* * * *

DR. CHARLES H. MEAD, 58, who practiced in Duluth for more than twenty years, died September 10. Illness forced his retirement in 1955. After receiving his M.D. degree from the University of Minnesota Medical School in 1928, he studied as a teaching fellow in the departments of pediatrics, pathology, and anatomy at the university. He continued in graduate school until 1933, serving a year as resident at Minneapolis General Hospital and then as a teaching fellow in the department of surgery. Dr. Mead also was an instructor and lecturer in the department of anatomy, and he received a master of science degree in surgery in 1933.

Dr. Mead's practice in Duluth began in 1933 and continued until 1955, except for three years in the U. S. Navy during World War II. Certified by the American Board of Surgery, Dr. Mead was a member of the St. Louis County Medical Society, Minnesota State Medical Association, Interurban Academy of Medicine, Minnesota Surgical Society, Duluth Surgical Society, and the Central Surgical Association. He was a staff member at St. Luke's, St. Mary's, and Miller Memorial hospitals in Duluth.

* * * *

DR. HAROLD R. LELAND, 65, died October 20 following a heart attack. He had been on the staff of Fairview Hospital, Minneapolis, since 1925 and was a former chief of staff. Dr. Leland was a 1923 graduate of the University of Minnesota Medical School and a diplomate of the American Board of Obstetrics and Gynecology. He was a member of the Hennepin County Medical Society, Minnesota Medical Association, Central Association of Obstetricians and Gynecologists, American College of Surgeons, and American College of Obstetricians and Gynecologists.

* * * *

DR. JAMES O. COOK, 86, died at Gregory, S.D., on October 16. Dr. Cook, a graduate of the University of Nashville Medical Department, began practice at Fairfax, S.D., in 1900. In 1946 he moved from Fairfax to Bonesteel, S.D., where he practiced before suffering a heart attack on October 13.

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